UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
FOURTH DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

and

STATE OF MINNESOTA, by its Attorney General Hubert H. Humphrey, III, its Department of Health, and its Pollution Control Agency

Plaintiff-Intervenor,

v.

REILLY TAR & CHEMICAL CORPORATION; HOUSING AND REDEVELOPMENT AUTHORITY OF ST. LOUIS PARK; OAK PARK VILLAGE ASSOCIATES: RUSTIC OAKS CONDOMINIUM INC.; and PHILIP'S INVESTMENT CO.,

Defendants.

and

CITY OF ST. LOUIS PARK,

Plaintiff-Intervenor,

v.

REILLY TAR & CHEMICAL CORPORATION,

Defendant.

and

CITY OF HOPKINS,

Plaintiff-Intervenor,

v.

REILLY TAR & CHEMICAL CORPORATION,

Defendant.

Civil No. 4-80-469

RESPONSE OF REILLY TAR & CHEMICAL CORPORATION TO UNITED STATES' AND STATE OF MINNESOTA'S REQUESTS FOR ADMISSIONS

Defendant Reilly Tar & Chemical Corporation (hereinafter "Reilly") makes the following response to the Request for Admissions of the United States and State of Minnesota dated February 5, 1985.

Reilly states that it denies all requests for admissions to the extent that they are not expressly admitted or qualified.

REQUESTS FOR ADMISSIONS

A. General

1. The site of the former plant owned and operated by Reilly is a 80-acre parcel of land bounded by West 32nd Street on the north, Gorham Avenue, Second Street Northwest and Republic Avenue on the east, Walker Street on the south and Pennsylvania Avenue and Oak Hill Park on the west.

RESPONSE: Reilly admits this request.

2. Generally, the site slopes downward along the north and west sides to the flat-lying central and southern section of the site.

RESPONSE: Reilly admits that generally, at the present time, the site slopes downward along the north and west sides to the flat-lying central and southern section of the site.

3. There is a swamp to the south of the site and water from the site drained into the swamp.

RESPONSE: Reilly admits this request.

4. Activities at the plant included both tar refining and wood-treating operations.

RESPONSE: Reilly admits this request.

5. The major buildings on the site were the refinery, the office building, the by-products building, and the wood treating retort building. The by-products building was removed in or about 1950. Minnesota Exhibit 9 accurately depicts the buildings and facilities on the site.

RESPONSE: Reilly admits the first two sentences of this request. Reilly qualifies the third sentence of this request by stating that Minnesota Exhibit 9, is a composite drawing which accurately depicts buildings and facilities which were located on the site at various times over the entire operating life of the plant.

B. Raw Materials

6. The major raw material used in the refining process at St. Louis Park was coal tar. Water gas tar and vertical retort tar were also used.

RESPONSE: Reilly admits this request.

7. From in or about 1953 until the plant's closure, coke oven tar was the primary coal tar used.

RESPONSE: Reilly admits this request.

8. Other raw materials used at the St. Louis Park plant included pitch, creosote oil, caustic soda and sulfuric acid, and fuel oil for heating the stills.

RESPONSE: Reilly denies that the materials listed are "raw" materials. Reilly admits that these materials were used at the St. Louis Park plant but denies that this is an exclusive list of materials used at the plant.

C. Transportation and Unloading

9. Crude tar was brought to the plant mainly by rail in tank cars.

RESPONSE: Reilly admits this request.

10. Crude tar was also trucked into the site.

RESPONSE: Reilly admits this request.

11. Crude tar was unloaded into the area of tankers unloading shed as shown on Minnesota Exhibit 9.

RESPONSE: Reilly admits this request.

12. Unloading the tank cars was accomplished by heating the tar so that it could be pumped.

RESPONSE: Reilly admits that the unloading of tank cars was facilitated in part by the heating of tar, but denies that the heating of tar was the only necessary step in unloading. Reilly also denies that the tar was pumped out of the tank cars. [See Response to Request for Admission No. 17.]

13. Steam lines were connected to rubber couplings on the tank cars. Steam was passed through coils in the tank car to heat the tar.

RESPONSE: Reilly admits that the steam lines were connected to couplings on tank cars but denies the

couplings were rubber. Reilly admits the second sentence of this admission.

14. Loading of refinery products for shipment off site was done at the tar loading dock located along side the refinery.

RESPONSE: Reilly admits this request.

15. Hot tar would sometimes bubble over and spill out of the trucks while loading. [Finch Transcript, pp. 351-2]

RESPONSE: Reilly admits that this statement was made by Finch at the referenced point in the transcript of his deposition and the statement was true in the context to which he was referring. Reilly denies that significant quantities of tar were involved.

16. Road tar spilled from the trucks was left on the ground. [Finch Transcript, pp. 351-2]

RESPONSE: Reilly admits that this statement was made by Finch at the referenced point in the transcript of his deposition and that the statement was true in the context to which he was referring. Reilly qualifies its response by adding that Reilly diked the area around the tanks to contain spilled road tar and that Finch also testified that the spilled road tar became a base for the road.

D. Storage

17. Crude tar was drained by gravity from the tank cars to a tar cistern for storage.

RESPONSE: Reilly admits this request.

18. Crude tar was also stored in storage tanks near the refinery.

RESPONSE: Reilly admits this request.

19. Materials other than crude tar were also pumped into storage tanks.

RESPONSE: Reilly admits this request.

20. The crude tar cistern was a steam-heated, in-ground storage facility.

RESPONSE: Reilly admits that the crude tar cistern was steam-heated and qualifies the remainder of the admission by stating that approximately three feet of the tar cistern was above ground.

21. The sides and bottom of the tar cistern were concrete.

RESPONSE: Reilly admits this request.

22. The tar cistern was 100 feet x 60 feet and designed to have a 308,700 gallon capacity.

RESPONSE: Reilly admits this request.

23. A wood roof covered the tar cistern.

RESPONSE: Reilly admits that a wood roof covered the tar cistern for a period of time.

24. The wood roof was removed from the cistern in or about the late 60's because of its deteriorated condition. [Finch Transcript, pp. 216-17, Answers to Interrogatory #22]

RESPONSE: Reilly admits this request.

25. After the tar cistern wood roof was removed no new roof ever replaced it. [Finch Transcript, p. 217, Hennessy Transcript, pp. 134-5]

RESPONSE: Reilly admits this request.

26. Water collected in the cistern on top of the tar after the roof was removed. [Finch Transcript, p. 218, Hennessy Transcript, pp. 134-5]

RESPONSE: Reilly admits that this statement was made by Finch at the referenced point in the transcript of his deposition and that the statement was true in the context to which he was referring.

27. Water which collected in the cistern either overflowed the cistern or was pumped out to the drainage ditch along Walker Street [Finch Transcript, p. 218]

RESPONSE: Reilly admits that this statement was made by Finch in the transcript of his deposition and that the statement was true in the context to which he was referring.

28. Water which overflowed from or was pumped out of the tar cistern drained to the drainage ditch along Walker Street, but did not go through the settling basin. [Finch Transcript, p. 218]

RESPONSE: Reilly admits that this statement was made by Finch in the transcript of his deposition and that the statement was true in the context to which he was referring.

29. In or about August 1962 carbon residue which collected in the bottom of the tar cistern was shoveled out. [Finch Transcript, p. [524]]

RESPONSE: Reilly denies this request as written. Reilly admits that in or about August 1962 buildup of solids and accumulation of emulsion which collected in the bottom of the tar cistern was shoveled out.

30. In or about August 1962 carbon residue buildup in the cistern had reduced the cistern's design holding capacity from approximately 308,700 gallons to approximately 210,000 gallons. [Minnesota Exhibit 26 to the Finch Transcript.]

RESPONSE: Reilly denies this request as written. Reilly admits that in or about August 1962 buildup of solids and accumulation of emulsion in the cistern had reduced the cisterns design holding capacity from approximately 330,000 gallons to approximately 210,000 gallons.

31. The residue from cleaning out the tar cistern was disposed of in the tie yard.

RESPONSE: Reilly objects to this request in that there is a failure to define the time period. Without waiving that objection, Reilly denies that the residue from cleaning out the tar cistern in or about August 1962 was disposed of in the tie yard.

32. The condition of the tar cistern in or about August 1962 was deteriorating. [Finch Transcript, pp. 216-17; Minnesota Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly denies this request as written. Reilly admits that in or about August 1962 the roof of the cistern was deteriorating and the steam coils were in need of repair.

33. In or about August 1962 the concrete on the sides of cistern which was above ground had begun to fall off. [Finch Transcript, pp. 216-217; Minnesota Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly admits this request.

34. In or about August 1962 it was possible to see [some] reinforcing rods for the above ground concrete section of the tar cistern due to broken off concrete. [Finch Transcript, p. 216; Minnesota Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly admits this request as corrected.

35. In or about August 1962 the coils used to supply steam heat for the tar cistern were in an extremely bad state of repair. [Finch Transcript, p. 216-217; Minnesota Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly admits that this request accurately reflects the statement which was made by Finch in Minnesota Exhibit 26 and that the statement was true in the context to which he was referring.

36. In or about August 1962 the steam heat coils for the tar cistern leaked. [Finch Transcript, p. 216-217; Minnesota Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly admits that in or about August 1962 the steam heat coils for the tar cistern were leaking steam.

37. In or about August 1962 the tar cistern had cracks in the concrete about 3 inches from the top on the northside. [Exhibit 26 to Finch Transcript.]

RESPONSE: Reilly admits this request.

38. When the tar cistern was full, tar seeped through the cement cracks in the concrete, [and went] out over the ground. [Finch Transcript, pp. [231-32]

RESPONSE: Reilly admits that this statement as corrected, was made by Finch in the transcript of his deposition and that the statement was true in the context to which he was referring.

39. The tar which [went out] through the cracks from the tar cistern was left on the ground and not recovered. [Finch Transcript, pp. 332-33]

RESPONSE: Reilly admits that this statement as corrected was made by Finch in the transcript of his deposition and that the statement was true in the context to which he was referring.

40. There were 10 storage tanks in addition to the tar cistern in which tar was stored, although the tanks were not dedicated exclusively to storing tar.

RESPONSE: Reilly admits this request.

41. In or about July 1962, many of tanks used for storage were in need of repair. [Finch Transcript, p. 336; Minnesota Exhibit 12 to Finch Transcript.]

RESPONSE: Reilly admits that in or about July 1962, although many of the tanks used for storage were in need of repair, they were in a satisfactory condition for use.

42. The storage tanks were riveted tanks. [Finch Transcript, p. 228]

RESPONSE: Reilly admits this request.

43. Riveted tanks do not seal as tightly was welded tanks. [Finch Transcript, p. 228]

RESPONSE: Reilly denies this request.

44. Riveted tanks are more likely to leak than welded tanks. [Finch Transcript, p. 228]

RESPONSE: Reilly denies this request.

45. The tanks at St. Louis Park plant would sometimes leak. [Finch Transcript, p. 228]

RESPONSE: Reilly admits this request.

46. A 35-year old steel tank is more likely to leak than a new tank.

RESPONSE: Reilly denies this request.

47. In or about July 1962, the storage facilities were old and in need of repair. [Finch Transcript, p. 336; Minnsota Exhibit 16 to the Finch Transcript]

RESPONSE: Reilly denies this request as written. Reilly admits that in or about July 1962, some of the components of the storage facilties were in need of repair.

48. The storage facilities were heated by steam coils or bayonet heaters. [Finch Transcript, p. 337]

RESPONSE: Reilly admits this request.

49. In or about 1962 many of the coils used to heat the tanks were in a poor state of repair.

RESPONSE: Reilly objects to the undefined use of the word "poor" in reference to the state of repair. Reilly admits that the coils used to heat the tanks were occasionally in need of repair and affirmatively states that such repairs as were required were made.

50. In or about July 1962 many of the heating coils leaked. [Minnesota Exhibit 12 to Finch Transcript.]

RESPONSE: Reilly admits that in or about July 1962 the condition of the heating coils was as described in Minnesota Exhibit 12.

51. In or about July 1962 some of the lines feeding coal tar to the plant were in need of repair. [Minnesota Exhibit 12 to Finch Transcript.]

RESPONSE: Reilly admits this request.

52. In or about July 1962 leaks were developing in some of the lines feeding the tar and creosote storage tanks. [Minnesota Exhibit 12 to Finch Transcript.]

RESPONSE: Reilly admits this request.

52A. In or about July 1982, there was a foot to a foot and a half of accumulation of oil solids and tar from leakage, mixed with sand and dirt in the trenches. [Minnesota Exhibit 12 to Finch Transcript]

RESPONSE: Reilly denies that there were trenches at the Reilly site in 1982 and further states that the document cited in reference to this admission speaks for itself.

53. Sometime in or after 1968 below ground working tanks north of the refinery were replaced with above-ground tanks. [Hennessy Transcript, p. 529]

RESPONSE: Reilly admits this request.

54. The below-ground tanks were replaced because of problems with storm water creating pressure around the tanks which would lift up the tanks. [Hennessy Transcript, p. 529; Finch Transcript, p. 30]

RESPONSE: Reilly admits that a reason for the decision to replace the tanks was problems with storm water creating pressure around the tanks which would lift up the tanks but denies why implication that this was the only such reason.

55. When water pressure lifted the below-ground tanks, this tended to break off the lines leading to the tanks,

making the lines leak. [Hennessy Transcript, p. 529; Finch Transcript, p. 30]

RESPONSE: Reilly admits this request but qualifies its response indicating that generally when the lines leaked, water would leak into the line to the below ground tanks but product would not leak out. [Minnesota Exhibit 16]

56. The below-ground tanks were installed sometime in or about the mid-1920's.

RESPONSE: Reilly admits this request.

57. The below-ground tanks, in or about 1968, were old and had several leaks. [Documents 201089, 201090, 108064 produced in connection with Lesher Disposition; Finch Transcript, p. 30]

RESPONSE: Reilly admits this request.

e. Trenches

58. The piping between the storage facilities and the refinery was contained underground in a system of pipe trenches.

RESPONSE: Reilly denies this request as written. Reilly admits that the piping between the storage facilities and the refinery was contained in a recessed system of pipe trenches.

59. In or about March 1967 the piping system in use had been in use since the 1917-1927 period. [Exhibit 30 to Finch Transcript.]

RESPONSE: Reilly admits that in or about March 1967 the piping system in use had been used since the 1917-1927 period, however pipes, valves and fittings in the piping system were replaced as needed.

60. The trenches had concrete floors and walls and were covered with wood. [Answer to Interrogatory No. 27; Hennessy Transcript p. 407.]

RESPONSE: Reilly admits this request.

61. Raw material, product and steam lines were all placed into the same trenches.

RESPONSE: Reilly admits that raw material lines, product lines and steam lines were all placed into the same trenches.

62. The trenches drained to the drainage system, identified as sewer line on Minnesota Exhibit 9.

RESPONSE: Reilly admits this request.

63. In or about the period between 1968 and 1970 all piping was removed from the trenches and placed above ground. [Answer to Interrogatory 27]

RESPONSE: Reilly admits this request.

64. The condition of the pipe trenches was poor when the plant began abandoning them in 1968. [Answer to Interrogatory 27]

RESPONSE: Reilly admits that the condition of the pipe trenches varied from excellent to poor when the plant began abandoning them in 1967.

65. The trenches were subject to periodic flooding when the refinery area became flooded during heavy rains. [Answer to Interrogatory 27]

RESPONSE: Reilly admits this request.

66. After about 1955 the trenches became filled with product, sand and silt. [Answer to Interrogatory 27]

RESPONSE: Reilly denies this request as written. Reilly admits as stated in answer to Interrogatory 27, after Louisiana Avenue was repaired and curbed in 1955 and the storm water discharged into the plant, the frequent flooding caused the trenches to eventually become filled with sand and silt covering the piping and making inspection and repair difficult.

67. Leaks from the pipes accumulated in the trenches. [Finch Transcript, pp. 265-66]

RESPONSE: Reilly admits this request.

68. The accumulation of sand and silt and product from leaks covered the piping making inspection for leaks and repair difficult. [Answer to Interrogatory 27; Hennessy Transcript, p. 456]

RESPONSE: Reilly denies this request as written. See response to Request for Admission 66.

69. In or about March 1967, some lines were almost inaccessible due to piping in the trenches and the pitch and sand and silt covering them. [Minnesota Exhibit 30 to Finch Transcript.]

RESPONSE: Reilly admits this request.

70. Freezing and thawing of the material in the trenches accelerated the deterioration of the concrete. [Answer to Interogatory 27]

RESPONSE: Reilly admits this request.

71. In or about July 1962 there were cracks in the concrete. [Minnesota Exhibit 12 to Finch Transcript.]

RESPONSE: Reilly admits that in or about July 1962 there were some cracks in the concrete trenches.

72. Leaks from the pipes would fall to the floor of the trench. [Hennessy Transcript; p. 456]

RESPONSE: Reilly admits this request.

73. The pipes in the trenches were screwed pipes. [Hennessy Transcript, p. 454]

RESPONSE: Reilly admits this request.

74. Screwed pipes leaked when moved. [Hennessy Transcript, p. 411]

RESPONSE: Reilly denies this request as written. Reilly admits that screwed pipes may leak when moved.

75. Screwed pipes were difficult [to] keep from leaking once a leak began. [Hennessy Transcript, p. 454]

RESPONSE: Reilly admits that this statement was made by Hennessy in the transcript of his deposition and is true in the context to which he was referring.

76. Pipes in the trenches were supported on hangers attached to the concrete sides of the trench. [Hennessy Transcript, p. 447]

RESPONSE: Reilly admits this request.

77. The deterioration of the concrete caused hangers to pull out of the concrete. [Exhibit 30 to Finch Disposition; Hennessy Transcript, p. 447]

RESPONSE: Reilly denies this request as written. Reilly admits that the deterioration of the concrete and the weight of the pipe caused some hangers to pull out of the concrete.

78. Hangers pulling away from the concrete sides of the trenches caused the pipes to deflect. [Hennessy Transcript, p. 448]

RESPONSE: Reilly denies this request as written. Reilly admits that hangers pulling away from the concrete sides sometimes caused the pipes to deflect.

79. Deflection of the pipes could cause leaks. [Hennessy Transcript, p. 448]

RESPONSE: Reilly admits this request.

F. By-Product Process

80. Light oils and solvent naphtha were used at the by-products plant to produce crude chemical products. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

81. The by-products flow diagram for the 1920's and 1930's is accurately represented in Figure A3-6 of the ERT Report. [ERT Report, p. A-11]

RESPONSE: Reilly admits that Figure A3-6 of the ERT Report is the best probable estimate of the by-products flow diagram for the 1920's and 1930's.

82. Light oil from the tar stills was extracted with caustic to produce an acid free oil and a solution of tar acid sodium salts called sodium carbonate or carbolate solution. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

83. Approximately 24,000 gallons per year of 70 percent caustic was used in the light oil extraction operation. [ERT Report, p. A-12]

RESPONSE: Reilly admits that this statement is from the ERT report and that in or about 1943 approximately 24,000 gallons per year of 70 percent caustic was used in the light oil extraction operation.

84. The carbolate solution from the extraction tank was processed in springing tanks using sulfuric acid, which liberated the acids and produced sodium sulfate. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

85. Approximately 15,000 gallons of sulfuric acid were used each year at the St. Louis Park plant. [ERT Report, p. A-12] 124.

RESPONSE: Reilly denies this request as written. Reilly admits this statement is from the ERT report and that in or about 1930 approximately 15,000 gallons of sulfuric acid was used annually during the years sulfuric acid was used. Reilly denies that sulfuric acid was used during all of the years the plant was in operation.

86. The acid free oil from the extraction tank was blended with the creosote oil and the crude tar acids were sold. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

87. A portion of the extraction tank solution was sent to chilling pans where naphthalane salts would crystallize out of the solution. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

88. The sodium sulfate solution obtained from the tar acid springing process was washed with solvent naphtha or light oil to remove any emulsified oils. [ERT Report, p. A-1[3]]

RESPONSE: Reilly admits this request.

89. Prior to in or about 1941, the sulfate wastewater was directly discharged. [ERT Report, p. A-13]

RESPONSE: Reilly admits that prior to 1941, the sulfate wastewater was directly discharged but qualifies its response by stating that this practice was in line with industry practice at the time.

90. Starting in or about 1941, the wastewater stream from washing the sodium sulfate solution was washed with neutral oil to remove phenolic contaminants before discharging to the plant wastewater system. [ERT Report, p. A-13]

RESPONSE: Reilly admits this request.

91. Crude tar acids were the primary products from the springing operation. [ERT Report, p. A-13]

RESPONSE: Reilly admits this request.

92. Crude tar acids were shipped to other Reilly plans that had the capabilities to process these acids into refined products. [ERT Report, p. A-13]

RESPONSE: Reilly admits this request.

93. The major refinery products after the closing of the by-products operation in or about 1950 were soft pitch, anode pitch, refined tars, and creosote oil. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

G. The Refinery

94. Refinery operations primarily consisted of the distillation of coal tar in batch stills. [Report, p. A-9]

RESPONSE: Reilly admits this request.

95. There were as many as 16 stills in operation at the St. Louis Park plant prior to in or about 1960. [Finch Transcript, pg. 292]

RESPONSE: Reilly admits this request.

96. In or about the 1960's and 1970's while the plant was in operation, there [were] four to six stills in operation. [Finch Transcript, pg. 292]

RESPONSE: Reilly admits this request.

97. The distillate cuts from the coal tar were obtained as the stills were progressively heated to higher temperatures and were called the wet, light oil, middle oil, and heavy oil cuts. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

98. The batch tar still operation consisted of charging the still with the crude coal tar, heating the tar to distill off the vapors, and passing these vapors through a condenser to collect the condensed distillate products. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

99. The extent of heating controlled the type of product obtained, such as a road tar, a given type of pitch, or coke. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

100. The distillate cuts from the still passed through a vapor condenser to receiving pans. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

101. From the receiving pans the condensate would be pumped to various storage and receiving tanks for

further processing, future use or storage prior to shipping. [Hennessy Transcript, p. 514-8]

RESPONSE: Reilly admits this request.

102. Figure A3-5 of the ERT Report accurately represents the probable refinery operating during the 1960's. [ERT Report, p. A-10]

RESPONSE: Reilly admits that Figure A3-5 of the ERT Report is the best probable estimate of the refining operations during the 1960's.

103. The wet cut consisted of water inherent in the coal tar charge. The wet cut was disposed by both vaporization and discharging during the early years of plant operation. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

104. The light oil cut, including light oils separated from the wet cut, was used in the by-product operation. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

105. Middle and heavy oils cuts were blended with acid free light oils from the by-product operation to make creosote preserving oil. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

106. Figure A3-4 of the ERT Report is an accurate representation of the probable flow diagram for the 1930's refinery operation. [ERT Report, p. A-9]

RESPONSE: Reilly admits that Figure A3-4 of the ERT Report is the best probable estimate of the flow diagram for the 1930's refinery operation.

107. The products obtained from the residues of the tar distillation were refined tars, roofing pitch, and coke. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

108. The middle and heavy oil cuts were blended with acid free light oil to make the wood preserving creosote oil. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

109. The creosote oil was both sold and used at the on-site woodtreating plant. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

110. The total distillate, except for the wet cut, was blended into creosote oil. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

111. Still unit #16 was an isothermal still. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

112. Still unit 16 performed a pyrolysis on water gas tars to give them characteristics similar to coke oven tars. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

113. The tar remaining after being processed in still unit 16 was transferred back to tar storage for subsequent processing in the tar distillation batch stills. [ERT Report, p. A-8]

RESPONSE: Reilly admits this request.

114. During the 1960's the isothermal still was no longer used because the plant only used coke oven tar in the tar stills in the 1960's, eliminating the need for a water gas tar conversion process. [ERT Report, p. A-12]

RESPONSE: Reilly admits this request.

115. Hot gases from the fuel combustion were enclosed within the brick walls supporting the still. The gases were allowed to surround the bottom half of the still confined by brickwork. [Hennessy Transcript, p. 34]

RESPONSE: Reilly admits this request.

116. In the mid-1950's the brickwork for the stills was removed and new "Lesher" stills were installed. [Hennessy Transcript, p. 34-35]

RESPONSE: Reilly admits that in the mid or late 1950's the brickwork for the stills was removed and the new "Lesher" stills were installed.

117. The Lesher stills had fire tubes that contained the hot gases and which were immersed in the tar. [Hennessy Transcript, p. 34-5]

RESPONSE: Reilly admits this request.

H. Refinery Maintenance

118. In or about 1954 the condenser coils and receiving pans were badly deteriorated. [Hennessy Transcript, pp. 327-328]

RESPONSE: Reilly objects to the reference to the Hennessy Transcript as primary support for this admission. Reilly admits that in or about 1954 the condensers and pans were deteriorated as reported in Minnesota Exhibit 18.

119. To repair leaks in the condensor coils pieces of pipe in the coil were cut out and as a result excessive hot vapor accumulated in the coils. [Hennessy Transcript, pp. 327-28]

RESPONSE: Reilly objects to the reference to the Hennessy Transcript as primary support for this admission. Reilly admits that the subject of this admission is explained in State Exhibit 18 and that the document speaks for itself. Reilly denies that the admission request as phrased accurately reflects the statement concerning repair of leaks found in State Exhibit 18.

120. The Lesher stills were installed to replace old stills which were in a poor state of repair. [Finch Transcript, p. 316]

RESPONSE: Reilly admits that Finch stated in his deposition at the referenced point in the transcript that the Lesher stills were installed to replace the Horner stills which

were not in good repair and that this statement was true in the context to which he was referring.

121. The poor state of repair of the stills meant that they operated inefficiently and were in danger of breaking. [Finch Transcript, p. 316]

RESPONSE: Reilly admits that Finch stated in his deposition at the referenced point in the transcript of his deposition that the stills didn't work properly meaning that they were in danger of breaking, and that the statement was true in the context to which he was referring.

122. The stills, before being replaced, had ruptured causing fires and product loss from the still. [Finch Transcript, pp. 316-317]

RESPONSE: Reilly admits that the stills, before being replaced, had ruptured causing a couple of fires and product loss from the still. [Finch Transcript, pp. 316-317] Reilly denies that significant quantities of product were involved.

123. In the Lesher stills on several occasions there were failures of the fire tubes, which permitted very hard pitch to run out of the fire tube through the air fans and onto the refinery firing room floor. [Lesher Transcript, pp. 151-52]

RESPONSE: Reilly admits that this statement was made by Lesher in the transcript of his deposition and that

this statement was true in the context to which he was referring.

124. The refinery experienced problems with leaking valves in the [h]eaders which controlled the movement of oil from the condensate receiving pans to the working tanks. [Finch Transcript, pp. 309-10; Hennessy Transcript, pp. 374-8]

RESPONSE: Reilly admits this request as corrected.

125. The leaking in the valves was such that it could not be determined into which tank material being pumped was going. [Finch Transcript, pp. 309-310, Hennessy Transcript, pp. 374-8]

RESPONSE: Reilly denies this request.

I. Boilers and Steam Operation

126. The plant used two boilers for steam production, a fire-tube boiler rated at 300 horsepower and a water tube boiler of 150 horsepower.

RESPONSE: Reilly admits that the plant used two boilers for steam production, a fire-tube boiler rated at approximately 310 horsepower and a water tube boiler of approximately 110 horsepower.

127. The boilers were originally fired with coal and later went to gas firing.

RESPONSE: Reilly admits this request but qualifies its response by indicating that other fuels were used during various time periods.

128. In the refinery, steam from the boilers was used to agitate still contents during distillation, to heat raw materials and products in the storage facilities, to facilitate pumping and to prevent solidification of products, to blow pitch for stills, to run steam pumps and to heat the buildings.

RESPONSE: Reilly admits that in the refinery, steam from the boilers was used to agitate still contents during distillation, to heat raw materials and products in the storage facilities, to facilitate pumping and to prevent solidification of products, to blow pitch from the stills, to run steam pumps and to heat the buildings.

129. Steam was also used in the wood treating plant and in the lab.

RESPONSE: Reilly admits this request.

130. Boilers experienced chronic maintenance problems caused by scale and in part by an oil and sand contaminated water supply to the boilers prior to when the boilers were connected to city water. [Finch Transcript, pg. 401; Hennessy Transcript, pp. 613-14, 622]

RESPONSE: Reilly admits that the boilers experienced chronic maintenance problems caused by scale prior to and when the boilers were connected to city water and

maintenance problems caused in part by oil and sand contaminated water supplies prior to the time when the boilers were connected to city water.

131. Water for the boilers came from a water supply pond located to the southwest of the refinery until in or about 1955 when City water was substituted.

RESPONSE: Reilly admits this request but qualifies its response by indicating that City water was used for a short time and that in late 1955 Reilly had in place a new pump and tank for use of W23 and continued to use W23 for the life of the plant.

J. The Pond

132. Water from the supply pond also was used to cool the condensers in the refinery.

RESPONSE: Reilly admits this request.

133. Pond water was pumped through the condensers' coils and was recycled to the pond.

RESPONSE: Reilly admits this request.

134. The pond was fed by a well to the southwest of the refinery known as the Republic deep well.

RESPONSE: Reilly admits this request.

135. Republic deep well was originally pumped by an air lift pump.

RESPONSE: Reilly denies this request. Reilly admits that the Republic deep well was originally pumped by either an air lift pump or a suction pump.

136. The water supply pond contained sand and oil balls which had been pumped into the pond from the Republic deep well. [Hennessy Transcript, pp. 186-7, 207]

RESPONSE: Reilly admits that the water supply pond contained sand and oil particles but denies that they were necessarily pumped into the pond from the Republic deep well.

137. Water from the pond, containing sand and oil particles, contributed to maintenance problems with the boilers. [Hennessy Transcript, pp. 620-23]

RESPONSE: Reilly admits this request.

K. Wood Treating Operation

138. The wood treating operation consisted of two major steps, first the pretreatment or conditioning of the wood and second the preservation or wood treating step.

RESPONSE: Reilly admits this request.

139. A variety of wood materials was treated at the Reilly plant including cross ties, switch ties, piles, poles, lumber, and miscellaneous posts, wood blocks, etc.

RESPONSE: Reilly admits this request.

140. The pretreatment step included curing and preparing the wood for preservation.

RESPONSE: Reilly admits this request.

141. The curing operation at the plant consisted of air seasoning, incising, adzing, boring, framing, and final water removal from the wood by treatment with hot creosote.

RESPONSE: Reilly admits this request.

142. For air seasoning, the white ties were stacked in the northeast portion of the site and untreated poles and bridge timbers were stacked to the west.

RESPONSE: Reilly admits this request.

143. Air seasoning of wood was accomplished by allowing the wood to stand in the yard for 12 to 14 months prior to treating.

RESPONSE: Reilly admits this request.

144. Prior to preservative treatment, ties were adzed and bored, and fir timbers were incised to permit penetration of the wood preservative.

RESPONSE: Reilly admits this request.

145. The seasoned wood was loaded on trams and pushed into one of three cylinders, also called retorts.

RESPONSE: Reilly admits this request.

146. The final pretreatment step, used in removing water from the wood, was the hot creosote/vacuum methods, sometimes referred to as the Boulton operation.

RESPONSE: Reilly admits that an initial conditioning process, sometimes used in removing water from the wood, was the hot creosote/vacuum methods, sometimes referred to as the Boulton operation.

147. The Boulton method consisted of charging the wood to the treating cylinder, filling the cylinder with

hot creosote (which heated the wood to vaporize its inherent moisture), and then pulling a vacuum to draw the water vapor out of the wood without damaging the wood.

RESPONSE: Reilly admits this request.

148. Open and closed steam-conditioning were additional drying processes performed in the treating cylinders.

RESPONSE: Reilly denies this request as written. Reilly admits that open and closed steam-conditioning were additional drying processes which may have been performed in the treating cylinders.

149. Open steam conditioning consisted of adding steam directly into the retort during the wood treating cycle.

RESPONSE: Reilly admits this request.

150. Closed steam conditioning consisted of heating water in the retort with the wood by passing steam through coils located at the bottom of the retort, thus vaporizing some of the water.

RESPONSE: Reilly admits this request.

151. In both open and closed steaming, water from the wood is evaporated thus drying the wood. The steam released in both cases is condensed.

RESPONSE: Reilly admits this request.

152. In the open system the condensate, which includes preservative from the vessel, is wasted.

RESPONSE: Reilly denies this request. In an open system of steam-conditioning, there is no preservative in the system at the time of steaming, therefore no preservative can be wasted.

153. Preservatives used at St. Louis Park included creosote oil, petroleum oil which was mixed with creosote oil in various proportions but primarily 50% - 50%, and pentachlorophenol which was used in a 2% solution with creosote for at least a 2 year period. [Finch, p. 38, 385]

RESPONSE: Reilly admits this request.

154. Pressure treating processes were used at the plant.

RESPONSE: Reilly admits this request.

155. The Rueping pressure treating process was used at the Reilly plant.

RESPONSE: Reilly admits this request.

156. The Lowry process was used on occasion at the Reilly plant.

RESPONSE: Reilly admits this request.

157. The Rueping method was the primary wood preserving method used at the plant.

RESPONSE: Reilly admits that the Rueping method was the primary wood preserving method used at the plant in 1961.

158. The Rueping method consisted of the following: (1) air was introduced to the cylinder and desired

pressure maintained; (2) preservative was added to the cylinder; and (3) the pressure was released and a vacuum drawn which forced some of the preservative out of the wood.

RESPONSE: Reilly admits this request, but qualifies its response by adding that the Rueping method consisted of the following: (1) air was introduced to the cylinder and desired pressure maintained, (2) preservative was added to the cylinder to submerge the material to be treated holding the air pressure constant; (3) preservative pressure was increased to 150 to 200 pounds per square inch and maintained at this level until the desired quantity of preservative was introduced; (4) pressure was released and the cylinder was emptied of preservative; and (5) a vacuum was normally drawn which assisted in removing excess preservative out of the wood.

159. The Lowry method consisted of the following: (1) after the vacuum from the hot creosote water removal step was released, the hot preservative solution was pressurized at 150 to 200 pounds per square inch and held until a specified absorption was obtained; (2) the oil was drained; and (3) a vacuum was drawn to remove any excess oil from wood.

RESPONSE: Reilly admits this request.

160. After treatment the wood was removed from the cylinders and shipped to customers or stored in the tie yard.

RESPONSE: Reilly admits this request.

L. Wood Treating Retorts

161. The actual preserving operation took place in one of three treating cylinders or retorts.

RESPONSE: Reilly admits this request.

162. The treating retorts were enclosed in a building. A separate building housed the treating room which acted like a control center for the treating process.

RESPONSE: Reilly admits this request.

163. The treating room was adjacent to another room which contained the work tanks for the process.

RESPONSE: Reilly admits this request.

164. The tanks were steam heated.

RESPONSE: Reilly admits this request.

165. The tanks were connected to the retorts by piping which travelled through a tunnel under railroad tracks which separated the retort building and the treating room.

RESPONSE: Reilly admits this request.

166. The treating room housed the pumps, the air compressor and the various gauges used to monitor the treating process.

RESPONSE: Reilly admits this request.

167. The treating retorts were 6 feet in diameter and 176 feet long.

RESPONSE: Reilly qualifies this admission by stating that the treating retorts were 6 feet in diameter and approximately 176 feet long.

168. Sumps were located under the retorts doors so that drips could be collected and reintroduced into the retorts or work tanks.

RESPONSE: Reilly admits this request.

169. Each retort held 21 or less trams depending on tie length, or 756 seven inch by eight inch sawed ties per charge.

RESPONSE: Reilly admits this request.

170. The cylinders were built in 1924-25 and were riveted.

RESPONSE: Reilly admits that the cylinders were built in 1924-25 and were riveted. Reilly qualifies its response by stating that the cylinders were installed in approximately 1929.

171. The rivets of the cylinders occasionally started leaking and would leak until caulked. [Hennessy Transcript, p. 133]

RESPONSE: Reilly admits this request.

172. Leaks from the cylinders would be of whatever preservative was being used on the wood at the time.

RESPONSE: Reilly admits this request.

173. The leaks went into a V-notch gutter in the floor that ran to a sump which fed into an oil-water separator, or s[e]ttling basin. [Hennessy Transcript, p. 133]

RESPONSE: Reilly denies this request as written. Reilly admits that the leaks went into a V-notch gutter in the floor that ran to a sump which fed into a settling tank in the vicinity of the treating room.

174. Preservative dripped from wood while sitting in the yard just after treatment. [Finch Transcript, p. 378]

RESPONSE: Reilly admits that preservative occasionally dripped from wood while sitting in the yard just after treatment.

175. Drippage also occurred from coating on the track bearings and wheels when wood was removed from cylinder after treatment. [Finch Transcript, p. 318]

RESPONSE: Reilly admits this request.

M. Plant Discharges

176. Two types of discharges occurred from the plant: 1) wastewater and 2) miscellaneous discharges, such as leaks, spills, and storm water run-off.

RESPONSE: Reilly objects to this request because no time frame is specified and also objects to the ambiguous use of the word "discharge" without definition. Subject to these objections, Reilly qualifies its response by stating that

to the extent there were spills and leaks minimal amounts were left on the ground or were released through the plant wastewater system.

177. In or about 1938, the plant wastewater sources included the following:

(1) Water from benzol separating tanks (wet cut water)

(2) Water from tar acid distillation

(3) Free water separating from storage tanks (including tar cistern water)

(4) Sulphate water resulting from springing of carbolate

(5) Blow-[down] water from boilers at Creosoting Plant

(6) Surface drainage water resulting from rain and melting snow.

RESPONSE: Reilly admits 177(1)-(4), admits 177(5) as corrected and admits that there was surface drainage from the Reilly site but denies that all of these sources were necessarily regarded as "wastewater." Reilly qualifies its response by stating that this is the best probable estimate of the plant wastewater sources in or about 1938.

178. In or about 1954, the plant wastewater sources included the following:

(1) Surface water

(2) Tank farm trench water - surface water, steam condensate, oil and tar spillage

(3) Water from oil-water cut in refinery

(4) Cooling water from refinery and air compressors

(5) Laboratory sink

(6) Boiler blowdown

(7) Water from tank 5 at treating plant.

RESPONSE: Reilly admits that 178(1)-(7) is the best probable estimate of the plant wastewater sources in or about 1954. Reilly denies that all of these sources were regarded as "wastewater."

179. The wastewater sources in or about 1960's and 1970's included the following:

(1) tar cistern water

(2) still distillation water (wet cut)

(3) boiler blowdown

(4) storm water run-off.

RESPONSE: Reilly admits that 179(1)-(4) is the best probable estimate of the plant wastewater sources in or about the 1960's and 1970's. Reilly denies that all of these sources were necessarily regarded as "wastewater."

180. Refinery and air compressor cooling water and contact steam condensates from tank heating were additional sources of wastewater.

RESPONSE: Reilly denies this request as written but admits that refinery and air compressor cooling water and non-contact steam condensates from tank heating were additional sources of wastewater.

181. Additional discharges at the plant included flooding at the site due to storm water runoff (or significant snow melting), spills and leaks, fires and explosions, tank cleanings and sludge disposals, and creosoted wood seepage.

RESPONSE: Reilly objects to this request because no time frame is specified and also objects to the ambiguous use of the word "discharge" without definition. Subject to these objections Reilly admits this request.

182. The viscous sludges were often used in the northern tie yard to extend and improve roadways.

RESPONSE: Reilly denies this request.

183. Oil and grease and phenolics were measured in the drainage ditch along Walker Street. The results of this data are summarized in table A3-3 of the ERT Report. [ERT Report, pp. 25-29]

RESPONSE: Reilly admits the first sentence of this rrequest. Reilly denies the second sentence of this request as written. Reilly admits the results of the reported data according to the references noted therein are summarized in Table A3-3 of the ERT Report.

184. Some fraction of the oil and grease and phenolics measured in the drainage ditch along Walker Street

was the result of the sludges used in the tie yard to improve the roadways. [ERT Report, p. A-29]

RESPONSE: Reilly denies this request.

185. Surface drainage caused water to fill the trenches which drained into the plant's drainage system, referred to as sewer line on Minnesota Exhibit 9.

RESPONSE: Reilly admits this request.

186. Water in the trenches contributed to leaks in the pipelines. [Hennessy Transcript, pp. 410-411]

RESPONSE: Reilly denies this request as written. Reilly admits that water freezing in the trenches may have contributed to leaks in the pipelines.

187. Water standing in the trenches caused the concrete floors to crack. [Hennessy Transcript, pp. 410-411]

RESPONSE: Reilly denies this request as written. Reilly admits that freezing water in the trenches may have caused the concrete floors to crack.

188. Table A3-1 of the ERT Report accurately reports the plant's wastewater flow rates measured. [ERT Report, pp. A-17-19]

RESPONSE: Reilly denies this request as written. Reilly admits that Table A3-1 of the ERT Report is a true and correct representation of the plant's wastewater flow rates reported, according to the references noted therein.

189. The tar acid distillation water and sodium sulfate liquor were batch discharge wastes of about 1,000 and

6,000-12,000 gallons per month, respectively. [ERT Report, p. A-20]

RESPONSE: Reilly admits that the best probable estimate of tar and distillation water and sodium sulfate liquor batch discharge wastes were about 1,000 and 6,000-12,000 gallons per month, respectively.

190. The wet cut wastewater was a batch discharge, amounting to approximately 4,800 gallons per month. [ERT Report, p. A-20]

RESPONSE: Reilly admits that the best probable estimate of wet cut wastewater discharge was 4,800 gallons per month.

191. In or about 1970 the wet cut amounted to approximately 300 gallons per day or 0.2 gallons per minute on a continuous basis. [ERT Report, p. A-20]

RESPONSE: Reilly admits that in or about 1970 the best probable estimate for wet cut discharge amounted to 300 gallons per day or 0.2 gallons per minute on a continuous basis.

N. Settling Basin

192. During the period from 1917 to 1939 no wastewater treatment was employed at the plant.

RESPONSE: Reilly admits that during the period from 1917 to 1939, once wastewater left the refining or treating areas no particular wastewater treatment was employed other than channeling the wastewater through a drainage ditch.

193. Figure A3-7 accurately represents the flow of wastewater through the St. Louis Park plant during the period of or about 1917 to 1939. [ERT Report, p. A-21]

RESPONSE: Reilly admits that Figure A3-7 is the best probable estimate of the flow of wastewater through the St. Louis Park plant during the period of or about 1917 to 1939.

194. During the period from about 1917 to about 1939 all plant wastewaters from the refinery, by-products, and wood treating operations were discharged untreated to an open ditch which carried them through the south tie yard to the plant discharge point at Walker Street.

RESPONSE: Reilly admits that during the period from about 1917 to about 1939 that for all plant wastewaters from the refinery, by-products, and wood treating operations no particular wastewater treatment was employed other than channeling the wastewater through the drainage ditch.

195. From there the wastewater flowed into a series of bogs and swamps south of the plant.

RESPONSE: Reilly objects to the undefined use of the word "flow." Subject to that objection, Reilly admits that a series of bogs and swamps south of the plant was connected to the plant disharge point at Walker Street but otherwise denies this request.

196. Until on or about 1930 wastewater flowed through the series of bogs south of the plant into Minnehaha Creek.

RESPONSE: Reilly objects to the undefined use of the word "flow." Subject to that objection, Reilly admits that until on or about 1930 the series of bogs south of the plant were connected to Minnehaha Creek but otherwise denies this request.

197. Access to Minnehaha Creek in or about 1930 was restricted when a culvert under Lake Street collapsed.

RESPONSE: Reilly admits this request.

198. Figure A3-8 accurately represents the flow of wastewater through the St. Louis Park Plant during the period of or about 1940 to 1950. [ERT Report, p. A-22]

RESPONSE: Reilly admits that Figure A3-8 is a best probable estimate of the flow of wastewater through the St. Louis Park Plant during the period of or about 1940 to 1950.

199. A phenol extraction tank was installed in or about 1941.

RESPONSE: Reilly admits this request.

200. The phenol extraction tank was removed in or about 1950. [Hennessy Transcript, p. 829]

RESPONSE: Reilly admits that the phenol extraction tank was removed in or about 1950, when the by-products operation was closed.

201. Figure A3-9 of the ERT Report accurately represents the flow of wastewater through the St. Louis Park plant during the period of or about 1951 to 1972. [ERT Report, p. A-23]

RESPONSE: Reilly admits that Figure A3-9 of the ERT Report is the best probable estimate of the flow of wastewater through the St. Louis Park Plant during the period of about 1951 to 1972.

202. An oil-wastewater separator, also referred to as a settling basin, was installed in or about the period 1940-41.

RESPONSE: Reilly admits this request.

203. A straw filter was added to the oil-water separator outlet in or about 1951.

RESPONSE: Reilly admits this request.

204. A second straw filter was added to the Walker Street drainage ditch in or about 1968.

RESPONSE: Reilly admits this request.

205. The oil-water separator was a retaining basin 10' x 16' x 50' made of treated wood.

RESPONSE: Reilly admits this request.

206. The oil-water separator was designed to handle 800 gallons per minute of water with a settling time of one hour.

RESPONSE: Reilly admits this request.

207. The oil-water separator was placed into the ground with the top about 1 foot above ground level.

RESPONSE: Reilly admits this request but qualifies its response by indicating that the level of the

oil-water separator was raised in the mid-1960's by adding timbers to the top of the separator.

208. The oil-water separator contained three sections separated by baffles.

RESPONSE: Reilly denies this request as written. Reilly admits that the oil-water separator contained sections separated by baffles.

209. The baffles in the oil-water separator were designed to concentrate floating and heavy materials near the inlet of the basin.

RESPONSE: Reilly admits this request.

210. The oil-water separator was designed to skim light oils off the top by a baffle to be pumped out of the basin into working tanks at the treatment plant.

RESPONSE: Reilly admits this request.

211. The oil-water separator was designed for heavy oils to settle to the bottom of the basin and be pumped off to a tank for recovery and reuse.

RESPONSE: Reilly admits this request.

212. Wastewater was fed to the oil-water separator by a pump which pumped out of a sump next to the basin.

RESPONSE: Reilly admits this request.

213. The sump was designed to collect water from the sewer lines shown on Minnesota Exhibit 9 which drained from

the refinery and treating areas and tank room, and from the ditches which ran along the dock and up to the lunch room.

RESPONSE: Reilly admits this request.

214. The sump was at a low spot on the site so that stormwater runoff also entered the treatment system.

RESPONSE: Reilly admits this request.

215. Water leaving the basin drained to the southwest corner of the property to an open ditch along Walker Street.

RESPONSE: Reilly admits this request.

216. The straw filter[s] consisted of two baskets that spanned the trench the water passed through upon leaving the settling basin.

RESPONSE: Reilly admits this request.

217. The first straw filter proved to be inadequate to filter the amount of oil coming through the basin. [Hennessy Transcript, p. 486]

RESPONSE: Reilly denies the request as written. Reilly admits that the first straw filters needed changing quite often to properly filter the effluent.

218. Neither the settling basin nor the straw filters were capable of removing emulsified oils.

RESPONSE: Reilly denies this request.

219. If the top baffle of the settling basin were broken, there would be poor skimming of the light oils

from the wastewater and the light oils would leave the settling basin with the wastewater. [Hennessy Transcript, p. 474]

RESPONSE: Reilly admits that Hennessy stated in his deposition at the referenced point, that if the top baffle of the settling basin were broken, there would be poor skimming of the light oils from the wastewater and that the statement was true in the context to which he was referring.

220. On or about March 28, 1967, the top baffle in the St. Louis Park settling basin was in need of repair.

RESPONSE: Reilly admits this request.

221. For the settling basin to effectively treate the wastewater it was necessary to prevent sludge from building up in the basin. [Hennessy Transcript, p. 102]

RESPONSE: Reilly denies this request as written. The settling basin was designed to collect sludges so by the very nature of the purpose of the basin, sludges would build up.

222. High levels of sludge in the settling basin meant less retention time and less separation of oil and water as a result. [Hennessy Transcript, p. 102]

RESPONSE: Reilly admits this request.

223. If sludge were 6 to 8 feet deep in the St. Louis Park settling basin, the basin would not effectively separate oil from the wastewater. [Hennessy Transcript, p. 470]

RESPONSE: Reilly admits that if sludge were 6 to 8 feet deep in the St. Louis Park settling basin, the basin

would separate oil from the wastewater less effectively than designed.

224. On or about of March 28, 1967, the St. Louis Park settling basin had not been cleaned in 20 years. [Minnesota Exhibit 22 to Finch Transcript]

RESPONSE: Reilly admits that Mootz stated in Minnesota Exhibit 20 that the settling pond had not been cleaned out in 20 years and that the statement was true in the context to which he was referring. Reilly qualifies its response by adding that the settling basin was pumped out on a regular basis.

225. On or about March 28, 1967, the St. Louis Park settling basin had 6 to 8 feet of sludge in the bottom of the basin. [Exhibit 22 to Finch Transcript]

RESPONSE: Reilly admits that Mootz stated in Minnesota Exhibit 22 that the settling pond had 6 to 8 feet of sludge in the bottom and that this statement was true in the context to which he was referring.

226. In or about May 1968, 50 loads of sludge from the St. Louis Park settling basin were hauled off the plant site by Hirsh Dumpster, Inc. [Exhibit 23 to Finch Transcript]

RESPONSE: Reilly admits this request.

227. The open ditch along Walker Street in or about 1961 was visibly stained dark by the wastewater which flowed through it. [Exhibit 3 to Finch Transcript]

RESPONSE: Reilly denies this request as written. Reilly admits that it is stated in Minnesota Exhibit 3 that the open ditch was dirty and black with dirt and tar and that this statement was true in the context to which the author was referring.

228. In or about 1961 the open ditch along Walker Street was poor in appearance with dirt and tar evident. [Minnesota Exhibit 3 to Finch Transcript]

RESPONSE: Reilly admits that it is stated in Minnesota Exhibit 3 that the open ditch had dirt and tar evident and that this statement was true in the context to which the author was referring.

229. In or about 1961 the soil around the open ditch along Walker Street was stained black. [Minnesota Exhibit 3 to Finch Transcript]

RESPONSE: Reilly admits that it is stated in Minnesota Exhibit 3 that soil at an area along the ditch was stained black and that this statement was true in the context to which the author was referring.

230. Sometime after 1961, Reilly spread gravel over the black-stained area around the open ditch along Walker Street. [Finch Transcript, p. 457]

RESPONSE: Reilly admits this request.

231. From the open ditch along Walker Street, wastewater from the St. Louis Park plant flowed into a bog south of the plant. [ERT]

RESPONSE: Reilly admits that from the open ditch along Walker Street, wastewater from the St. Louis Park plant emptied into a bog south of the plant.

232. The bog or swamp south of the St. Louis Park plant served as a sink for the plant effluent throughout the plant's operational life. [ERT]

RESPONSE: Reilly objects to the undefined use of the work "sink." Reilly admits that the bog or swamp south of the St. Louis Park plant received the plant effluent throughout the plant's operational life.

233. The bog or swamp south of the St. Louis Park plant received contaminants from surface run-off and wastewater from the St. Louis Park plant. [ERT Report, p. B-69]

RESPONSE: Reilly admits this request.

O. Wells

234. The Reilly plant site contains two deep multi-aquifer wells.

RESPONSE: Reilly objects to the undefined use of the term "multi-aquifer wells" and interprets that term to mean a well that connects two aquifers. Reilly admits that this request is true for the period 1918 through 1933, but denies that the Reilly plant site presently contains two deep multi-aquifer wells.

235. One deep well, referred to as the Sugar Beet Well, was drilled in 1898.

RESPONSE: Reilly denies this request as written. Reilly admits that the well referred to as the Sugar Beet Well was drilled in approximately 1898.

236. The Sugar Beet Well is designated by the U.S. Geological Survey (hereinafter "USGS") as W105. [USGS Water-Supply Paper 2211]

RESPONSE: Reilly admits this request.

237. The Sugar Beet Well (hereinafter "W105") was drilled for a sugar beet manufacturing company which occupied the plant site prior to Reilly owning the site.

RESPONSE: Reilly admits that the Sugar Beet Well was drilled for a sugar beet refining company which occupied the plant site prior to Reilly owning the site.

238. W105 was drilled by Swenson Well Company.

RESPONSE: Reilly admits this request.

239. The other deep well, referred to as the Republic Deep Well, was drilled in and about the period between December 1917 and May 1918. [well log]

RESPONSE: Reilly admits this request.

240. The Republic Deep Well is designated by USGS as W23. [USGS Water-Supply Paper 2211]

RESPONSE: Reilly admits this request.

241. The Republic Deep Well (hereinafter "W23") was drilled by McCarthy Well Company for the Republic Creosote Company. [well log]

RESPONSE: Reilly admits this request.

242. W23 was located near the southern end of the southwest wall of the refinery building. [ERT, page A-5]

RESPONSE: Reilly admits this request.

243. W105 is located approximately 250 feet southeast of the Republic Deep Well.

RESPONSE: Reilly denies this request as written. Reilly admits that W105 is located approximately 250 feet south of the Republic Deep Well.

244. W23 was the supply well for the Reilly plant throughout the life of the plant.

RESPONSE: Reilly admits this request.

P. Geology/Hydrology

245. There are five major aquifers underlying the St. Louis Park area. [ERT, p. 16]

RESPONSE: Reilly admits this request.

246. The five major aquifers underlying the St. Louis Park area the Mt. Simon-Hinkley, the Ironton-Galesville, the Prairie du Chein-Jordan, the St. Peter and the Drift-Platteville aquifers. [ERT, p. 16]

RESPONSE: Reilly admits this request.

247. Plate 2 of the Hult-Schoenberg report, "Preliminary Evaluation of Ground-Water Contamination by Coal-Tar Derivatives, St. Louis Park Area, Minnesota," (1984) contains a true and correct depiction of the geologic and

water-bearing characteristics of hydrogeologic units beneath the St. Louis Park area, including the five major aquifers.

RESPONSE: Reilly admits this request.

248. The Drift-Platteville aquifer is comprised of two aquifers, the Drift aquifer and the Platteville aquifer, which are separated in certain portions of the St. Louis Park area by the Decorah shale confining bed.

RESPONSE: Reilly admits that the Drift-Platteville aquifer is comprised of two aquifers, the Drift aquifer and the Platteville aquifer. Reilly denies that the Drift-Platteville is separated in certain portions of the St. Louis Park area by the Decorah shale confining bed.

249. The Drift aquifer is the aquifer closest to the land surface.

RESPONSE: Reilly admits this request.

250. The thickness of the Drift aquifer ranges from approximately 50 to 400 feet.

RESPONSE: Reilly denies this request. As indicated in WSP2211, Plate 2, Hult & Schoenberg, 1984 the maximum drift thickness in the study area is 220 feet. There are areas in Minnesota where the Drift thickness approaches zero feet.

251. The Drift aquifer is comprised of till, outwash, and valley-train sand and gravel, lake deposits, and alluvium.

RESPONSE: Reilly denies this request as written. Reilly admits that the Drift geologic unit is comprised of till, outwash, and valley-train sand and gravel, lake deposits, and alluvium.

252. In the immediate vicinity of the Reilly plant site in St. Louis Park, the Drift aquifer is comprised of three poorly-defined units (in some places, the Middle Drift/basal drift is semi-confined), the Upper Drift aquifer, the Middle Drift aquifer, and a lower-drift complex.

RESPONSE: Reilly admits this request.

253. The Drift aquifer is used as a water supply in areas of Minnesota other than the St. Louis Park area.

RESPONSE: Reilly objects to the undefined use of the words "water supply." Subject to this objection Reilly admits that aquifers composed of drift materials are used as water supplies in areas of Minnesota other than the St. Louis Park area.

254. The Platteville aquifer is the aquifer immediately beneath the Drift aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that where the Platteville aquifer has not been removed by erosion, it is overlain by drift.

255. The Decorah shale confining bed is an aquitard which separates the Drift and Platteville aquifers in certain areas in the St. Louis Park area.

RESPONSE: Reilly denies this request.

256. The basal drift and Decorah shale confining bed, where present, reduces the rate of vertic[al] flow from the Drift Aquifer to the Platteville Aquifer.

RESPONSE: Reilly admits this request.

257. The Platteville aquifer is a bedrock aquifer comprised of dolomitic limestone and dolomite, with some shale partings.

RESPONSE: Reilly admits this request.

258. The approximate thickness of the Platteville aquifer is between zero and 35 feet.

RESPONSE: Reilly admits this request.

259. The aquifer immediately beneath the Platteville aquifer is the St. Peter aquifer.

RESPONSE: Reilly admits this request.

260. The Platteville and St. Peter aquifers are separated by an aquitard known as the Glenwood confining bed.

RESPONSE: Reilly denies this request as written. Reilly admits that the Platteville and St. Peter aquifers are usually separated by the Glenwood formation which is considered to be a confining bed.

261. The Glenwood confining bed has an approximate range of thickness of between zero and eighteen feet.

RESPONSE: Reilly denies this request as written. Reilly admits that the Glenwood confining bed has an approximate range of thickness of between zero and seven feet.

262. The Glenwood confining bed is comprised of shale and claystone.

RESPONSE: Reilly admits this request.

263. The St. Peter aquifer has a thickness of between zero and one hundred feet in the St. Louis Park area.

RESPONSE: Reilly admits this request.

264. The St. Peter aquifer contains primarily sandstone.

RESPONSE: Reilly denies this request as written. Reilly admits that the St. Peter aquifer consists of primarily sandstone.

265. The St. Peter aquifer is a bedrock aquifer.

RESPONSE: Reilly admits this request.

266. The St. Peter aquifer supplies approximately 10% of the groundwater pumped in the St. Louis Park area.

RESPONSE: Reilly admits this request.

267. Wells drawing water from the St. Peter aquifer are primarily used for domestic supply.

RESPONSE: Reilly denies this request.

268. There is an aquitard between the St. Peter aquifer and the Prairie du Chien-Jordan aquifer.

RESPONSE: Reilly admits that the St. Peter aquifer and the Prairie due Chien-Jordan aquifer are separated by the basal portion of the St. Peter Formation.

269. The aquitard between the St. Peter and Prairie du Chien-Jordan aquifers is known as the Basal St. Peter confining bed.

RESPONSE: Reilly denies this request as written. Reilly admits that the St. Peter and Prairie du Chien-Jordan aquifers are separated by the basal portion of the St. Peter Formation which consists of siltstone and claystone interbedded with sandstone which is considered to be a confining bed.

270. The Basal St. Peter confining bed is present over most of the St. Louis Park area.

RESPONSE: Reilly objects to the use of the phrase "most of the St. Louis Park area" as ambiguous. Without waiving that objection, Reilly admits that the distribution (extent and thickness) of the Basal St. Peter is represented according to the best available knowledge in the various figures in WSP2211, Hult & Schoenberg, 1984.

271. The Basal St. Peter confining bed ranges in thickness from approximately zero to 65 feet.

RESPONSE: Reilly admits that the distribution (extent and thickness) of the Basal St. Peter is represented according to the best available knowledge in the various figures in WSP2211, Hult & Schoenberg, 1984.

272. The Prairie du Chien group of the Prairie du Chien-Jordan aquifer is comprised primarily of dolomite. The Jordan group of the aquifer is comprised primarily of sandstone.

RESPONSE: Reilly denies that the Jordan is a group; rather it is a single sandstone formation. Reilly admits the remainder of the request.

273. The Prairie du Chien group ranges in thickness up to 170 feet, the Jordan group up to 130 feet in the Twin Cities basin.

RESPONSE: Reilly denies that the Jordan is a group, rather it is a single sandstone formation. Reilly admits the remainder of this request.

274. The Prairie du Chien-Jordan aquifer is a bedrock aquifer.

RESPONSE: Reilly admits this request.

275. An aquitard known as the St. Lawrence-Franconia confining bed separates the Prairie du Chien-Jordan aquifer from the immediately underlying aquifer.

RESPONSE: Reilly admits that the St. Lawrence-Franconia confining bed separates the Prairie du Chien-Jordan aquifer from the immediately underlying aquifer.

276. The St. Lawrence-Franconia confining bed is comprised of siltstone and sandstone.

RESPONSE: Reilly admits this request.

277. The approximate range of thickness of the St. Lawrence-Franconia confining bed is 150 to 250 feet.

RESPONSE: Reilly admits this request. Reilly qualifies its admission by stating that this range of thickness is not found in the St. Louis Park area.

278. The Ironton-Galesville aquifer is the aquifer immediately beneath the St. Lawrence-Franconia confining bed.

RESPONSE: Reilly admits this request.

279. The Ironton-Galesville aquifer is approximately 50 feet thick.

RESPONSE: Reilly admits this request.

280. The Ironton-Galesville aquifer consists primarily of sandstone.

RESPONSE: Reilly admits this request.

281. The Ironton-Galesville aquifer is a bedrock aquifer.

RESPONSE: Reilly admits this request.

282. The aquitard known as the Eau Claire formation separates the Ironton-Galesville aquifer from the aquifer immediately beneath the Eau Claire formation.

RESPONSE: Reilly admits that in the St. Louis Park area the confining bed known as the Eau Claire formation separates the Ironton-Galesville aquifer from the aquifer immediately beneath the Eau Claire formation.

283. The Eau Claire aquitard has a thickness approximately 105 feet.

RESPONSE: Reilly admits that in the St. Louis Park area the Eau Claire confining bed has a thickness of approximately 105 feet.

284. The Eau Claire aquitard is comprised of siltstone and shale. The deepest known aquifer in the St. Louis Park area is the Mount Simon-Hinckley Aquifer.

RESPONSE: Reilly denies the request as written. Reilly admits that the Eau Claire confining bed is comprised of siltstone and shale. Reilly admits that the deepest major aquifer in the St. Louis Park area is the Mount Simon-Hinckley Aquifer.

285. The Mount Simon-Hinckley Aquifer lies directly underneath the Eau Claire confining bed and the Ironton-Galesville Aquifer.

RESPONSE: Reilly admits that the Mount Simon-Hinckley Aquifer lies directly underneath the Eau Clair confining bed and denies the remainder of the request.

286. The Mount Simon-Hinckley Aquifer consists primarily of sandstone.

RESPONSE: Reilly admits that in the St. Louis Park area the Mount Simon-Hinckley aquifer consists primarily of sandstone.

287. The Mount Simon-Hinckley Aquifer has a range of thickness of approximately 260 to 270 feet.

RESPONSE: Reilly admits that in the St. Louis Park area the Mount Simon-Hinckley aquifer has a range of thickness of approximately 260 to 270 feet.

288. The Mount Simon-Hinckley Aquifer supplies about 15% of the groundwater pumped in the St. Louis Park and seven-county metropolitan area.

RESPONSE: Reilly admits that the Mount Simon-Hinkley aquifer supplies about 15% of the total ground water pumped in the St. Louis Park and seven-county metropolitan area.

289. The Mount Simon-Hinckley sandstone formations comprise a bedrock aquifer.

RESPONSE: Reilly admits this request.

290. In the Twin Cities hydrogeologic basin, the elevation of the potentiometric surface for each aquifer is higher than for the aquifer(s) below it.

RESPONSE: Reilly admits that in the Twin Cities hydrogeologic basin, the elevation of the potentiometric surface for each aquifer is generally higher than for the aquifer(s) below it.

291. The head gradient for the aquifer systems in the St. Louis Park area, which is related to the potentiometric surfaces, would produce flow from higher to lower aquifers unless prevented by an aquitard.

RESPONSE: Reilly denies this request.

Q. Installation of Wells

292. W105 was drilled to a depth of 866 feet.

RESPONSE: Reilly denies this request as written. Reilly admits that W105 was redrilled to a depth of 866 feet in approximately 1918.

293. W105 penetrates through the Drift aquifer.

RESPONSE: Reilly admits this request.

294. W105 penetrates through the Platteville aquifer.

RESPONSE: Reilly admits this request.

295. W105 penetrates through the St. Peter aquifer.

RESPONSE: Reilly admits this request.

296. W105 penetrates through the Prairie du Chien-Jordan aquifer.

RESPONSE: Reilly admits this request.

297. W105 penetrates through the Ironton-Galesville aquifer.

RESPONSE: Reilly admits this request.

298. W105 penetrates into the Mt. Simon sandstone formation of the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that W105 at one time penetrated into the Mt. Simon sandstone formation of the Mt. Simon-Hinkley aquifer.

299. W23 was drilled to a depth of 909 feet. [well log]

RESPONSE: Reilly admits that W23 was drilled to a depth of approximately 909 feet.

300. W23 penetrates through the Drift aquifer. [well log]

RESPONSE: Reilly admits this request.

301. W23 penetrates through the Platteville aquifer. [well log]

RESPONSE: Reilly admits this request.

302. W23 penetrates through the St. Peter aquifer. [well log]

RESPONSE: Reilly admits this request.

303. W23 penetrates through the Prairie du Chien-Jordan aquifer. [well log]

RESPONSE: Reilly admits this request.

304. W23 penetrates through the Ironton-Galesville aquifer. [well log]

RESPONSE: Reilly denies this request as written. Reilly admits that at one time W23 penetrated through the Ironton-Galesville aquifer.

305. W23 penetrates into the Mt. Simon sandstone formation of the Mt. Simon-Hinckley aquifer. [well log]

RESPONSE: Reilly denies this request as written. Reilly admits that at one time W23 penetrated into

the Mt. Simon sandstone formation of the Mt. Simon-Hinkley aquifer.

R. Construction of Wells

306. The original construction of W23 (Republic Deep Well) was:

(a) a 12-inch casing extending from two feet below ground suface (hereinafter "GS") to 65 feet below GS,

(b) A 10-inch casing from [80] feet below GS to [257] feet below GS,

(c) a 7-inch casing from 227 feet below GS to 373 feet below GS. [well log]

RESPONSE: Reilly admits (a) and (c) of this request and admits subpart (b) of this request as corrected. Reilly qualifies its admission by adding item (d) an approximately 7-inch hole from 373 to approximately 909 feet below GS.

307. The term "pit construction" refers to casing which is set into the well below the ground surface. [well log]

RESPONSE: Reilly denies this request.

308. The 12-inch casing in W23 separates the well from soils in the Drift Aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that one purpose of the 12-inch casing

installation was to prevent drift materials from entering the well.

309. The 10-inch casing in W23 separates the well from soils in the Drift aquifer and bedrock formations down through the St. Peter aquifer.

RESPONSE: Reilly denies this request. Reilly admits that the 10-inch casing in W23 is located adjacent to the St. Peter Formation.

310. The 7-inch casing in W23 separates the well from the Prairie du Chien bedrock formation.

RESPONSE: Reilly denies this request as written. Reilly admits that when originally constructed, the 7-inch casing in W23 was located adjacent to the Prairie du Chien bedrock formation.

311. The driller's log indicates that static water level in W23 was 46 feet below ground surface. [well log]

RESPONSE: Reilly denies this request.

312. The water level in W23 after original construction when pumping at approximately 150 gallons per minute (gpm) was 63 feet below ground surface. [well log]

RESPONSE: Reilly denies this request as written. Reilly admits that the water level in W23 during the original construction when pumping at approximately 150 gallons per minute (gpm) was 63 feet below ground surface.

313. Water level in W23 after original construction when pumping at approximately 300 gpm, was 80 feet below ground surface. [well log]

RESPONSE: Reilly denies this request as written. Reilly admits that the water level in W23 during the original construction when pumping at approximately 300 gpm, was 80 feet below ground surface.

314. The construction of W23 was altered after the first two pumping tests and before the third pumping test. [well log]

RESPONSE: Reilly admits this request.

315. W23 was altered after the first two pumping tests by the removal of approximately the top 80 feet of the 10-inch casing to expose the well to the Platteville formation. [well log]

RESPONSE: Reilly admits this request.

316. The alteration of W23 described in Request for Admission 315 was done in and about the spring of 1918. [well log]

RESPONSE: Reilly admits this request.

317. The W23 construction, after the alteration in the spring of 1918, was as follows:

(a) 12-inch casing from two feet below GS to 65 feet below GS,

(b) Open (uncased) from 65 feet below GS to 80 feet below GS,

(c) 10-inch casing from 80 feet below GS to 257 feet below GS, and

(d) 7-inch casing from 227 feet below GS to 373 feet below GS. [well log]

RESPONSE: Reilly admits 317 (a)-(d) but qualifies its response adding item (e) an approximately 7-inch open hole from 373 feet to approximately 909 feet.

318. Static water level in W23, after the removal of casing in 1918, was 17 feet below GS, according to the driller's log. [well log]

RESPONSE: Reilly admits this request.

319. Water level in W23 after the removal of casing in 1918, when pumping approximately 330 gpm, was 27 feet below GS. [well log]

RESPONSE: Reilly admits that the water level in W23 after the removal of 80 feet of 10-inch casing in 1918, when pumping approximately 330 gpm, was 26 feet below GS.

320. The alteration of W23 described in Request for Admission 315 would have allowed ground water to flow from the Platteville aquifer to the lower aquifers:

(a) Prairie du Chien-Jordan aquifer,

(b) Ironton-Galesville aquifer, and

(c) Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly denies this request.

321. W23 was originally pumped by a suction pump.

RESPONSE: Reilly admits that W23 was originally pumped by a suction pump or airlift pump.

322. In and about December 1919, a proposal was made to install an airlift pump in W23. [Robinson, Cary and Sand Co. proposal, Dec. 1919]

RESPONSE: Reilly admits this request.

323. The airlift pump was installed in W23.

RESPONSE: Reilly admits this request.

324. With either a suction pump or an airlift pump in W23, an open annular space would exist between the eductor pipe (that withdrew water from the well) and the well casing. [Robinson, Cary & Sand Co. proposal]

RESPONSE: Reilly denies this request.

325. Originally well water was pumped from W23 to a storage pond located east of the well.

RESPONSE: Reilly admits that upon completion of the well in the spring of 1918, well water was pumped from W23 to a storage pond located east of the well.

326. Originally, water pumped from W23 to the storage pond was then pumped from the storage pond to the Reilly plant for use.

RESPONSE: Reilly admits that upon completion of the well in the spring of 1918, water pumped from W23 to the storage pond was then pumped from the storage pond to the Reilly plant for use.

S. Changes to Well Construction

327. In or about 1933, casing was added to W23 so the well casing was continuous from the ground surface to 373 feet. [McCarthy Well Company records letter from A. E. Larkin to P. C. Reilly 4/8/[3]3]

RESPONSE: Reilly admits this request.

328. In or about 1933, W105 was plugged. [letter from P. C. Reilly to A. E. Larkin, 4/7/33]

RESPONSE: Reilly admits this request.

329. In or about 1955, the airlift pump in W23 was replaced by a turbine pump. (Order from U. Luther to Peters, 9/28/55)

RESPONSE: Reilly admits that the turbine pump in W23 was for a period of time water lubricated.

330. The turbine pump in W23 was water lubricated.

RESPONSE: Reilly admits this request.

331. In or about March 1958, the water lubricated turbine pump bearings in W23 began to seize up. [Letter Holstrum to Horner 3/5/58]

RESPONSE: Reilly admits this request.

332. The water lubricated turbine pump bearings in W23 began to seize up due to the intrusion of coal tar-like material entering the bearing area.

RESPONSE: Reilly denies this request as written. Reilly admits that the water lubricated turbine pump

bearings in W23 began to seize up after prolonged shut-down periods apparently due in part to the presence of small particles of a tar-like or petroleum-like material on the bearings.

333. A four and one-half inch liner was installed in W23 to address the seizing up of the turbine pump bearings. [E. H. Renner & Sons, Inc. records]

RESPONSE: Reilly admits this request.

334. The 4-1/2" line installed in W23 did not prevent the seizing up of the turbine pump bearings.

RESPONSE: Reilly admits this request.

335. In or about 1966, the water lubricated turbine pump in W23 was replaced with an oil lubricated turbine pump. [Order from Layne-Minnesota Co. 8/31/66]

RESPONSE: Reilly admits this request.

336. The oil lubricated turbine pump in W23 has enclosed bearings.

RESPONSE: Reilly denies this request as written. Reilly admits that the oil lubricated turbine pump in W23 had shaft seals to reduce water flow in oil enclosing tube where the line shaft and main adapter bearings were located.

T. Well Contamination

337. Coal tar and creosote contain a family of compounds called polynuclear aromatic hydrocarbons (hereinafter "PAHs").

RESPONSE: Reilly denies this request as written. Reilly admits that coal tar and creosote contain a class of compounds called PAH, which Reilly defines as chemicals consisting of carbon and hydrogen and containing two or more fused aromatic rings, with each ring consisting of five or six carbon atoms. Unless otherwise stated, alkyl-substituted PAH are also included by this term. For purposes of these admissions, the definition of PAH also includes heterocyclic PAH, defined as PAH chemicals with one or more aromatic carbon atoms replaced by nitrogen, oxygen, or sulfur atoms. Unless otherwise stated, alkyl-substituted heterocylic PAH are also included by this term.

338. Coal tar is comprised of thousands of compounds formed as a by-product of the coking process that converts bituminous coal to coke by heating.

RESPONSE: Reilly admits this request.

339. Creosote is distilled from coal tar.

RESPONSE: Reilly admits this request.

340. Creosote is a flammable, heavy, oily liquid.

RESPONSE: Reilly admits that creosote is a heavy, oily liquid. Reilly denies per current Department of Transportation standards, that creosote is flammable.

341. Creosote contains phenols, cresols, pyridine, and polyaromatic and heterocyclic compounds.

RESPONSE: Reilly admits this request but denies that this is an exclusive list of the constituents of creosote.

342. Phenolics and PAHs (hereinafter jointly referred to as "coal-tar derivatives") were produced at the Reilly plant in St. Louis Park.

RESPONSE: Reilly denies this request.

343. Coal-tar derivatives have entered the groundwater system in the St. Louis Park area.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives have been measured in the Drift, Platteville, Prairie du Chien-Jordan and Ironton-Galesville aquifers in the St. Louis Park area. Reilly is unable to either admit or deny Requests for Admissions 343-349 with respect to the St. Peter aquifer at this time due to inadequate data.

344. Coal-tar derivatives have entered the groundwater in the St. Louis Park area through surface runoff and discharge of plant process-water from the Reilly plant.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives have entered the Drift in the immediate vicinity of the plant site through surface runoff and discharge of plant process-water from the Reilly plant.

345. Coal-tar derivatives have entered groundwater in the St. Louis Park area through spills and drippings which occurred during the operation of the Reilly plant.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives have entered the Drift aquifer under the former plant site through spills and drippings which occurred during the operation of the Reilly plant.

346. Coal-tar derivatives have been introduced into the groundwater in the St. Louis Park area as a result of the operations of the Reilly plant.

RESPONSE: Reilly denies the request as written. Reilly admits that certain coal-tar derivatives have been introduced into the Drift, Platteville, Prairie du Chien-Jordan and Ironton-Galesville aquifers as a result of the operations of the Reilly plant.

347. Coal-tar derivatives which have entered the groundwater at or near the Reilly plant in St. Louis Park have migrated in several aquifers.

RESPONSE: Reilly denies the request as written. Reilly admits that certain coal-tar derivatives which have entered the Drift, Platteville, and Prairie du Chien-Jordan aquifers at or near the Reilly plant in St. Louis Park have migrated in these several aquifers.

348. The coal-tar derivatives are present in the groundwater system in the St. Louis Park area.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives are

present in some areas of the Drift, Platteville, Prairie du Chien-Jordan and Ironton-Galesville aquifers in the St. Louis Park area.

349. Coal-tar derivatives have entered the groundwater through Well 23.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives have entered the Drift, Platteville, Prairie du Chien-Jordan and Ironton-Galesville aquifers.

350. After W23 was completed in 1918, water was initially withdrawn from the well by a suction pump.

RESPONSE: Reilly admits that after W23 was completed in 1918, water was withdrawn from the well by a suction pump or airlift pump.

351. The suction pump originally installed in the Republic well was replaced by an airlift pump which was installed in or about 1920.

RESPONSE: Reilly denies this request as written. Reilly admits that a suction pump may have originally been installed in the Repubic well and an airlift pump was installed in or about 1920.

352. In W23, the eductor pipe diameter was smaller than the well casing of either the suction pump or airlift pump, providing an open annular space between the eductor pipe and the well casing.

RESPONSE: Reilly denies this request.

353. The open annular space in W23 was not sealed at the top of or within the well.

RESPONSE: Reilly denies this request.

354. The well casing in W23 was constructed in a pit, such that the top of the casing was below the ground surface.

RESPONSE: Reilly denies this request.

355. This open annular space in W23 between the eductor pipe and the well casing is a possible pathway for coal-tar derivatives and for contaminants to enter the well.

RESPONSE: Reilly denies this request.

356. After W23 was completed in 1918, the well was open to the Platteville, the Prairie du Chien-Jordan, Ironton-Galesville and Mt. Simon[-Hinckley] aquifers.

RESPONSE: Reilly admits this request, as corrected.

357. The potentiometric surfaces for each aquifer in the area is such that if a means of migration is present, water from an aquifer would flow downward through the well and into a lower aquifer.

RESPONSE: Reilly denies this request.

358. The entrance of coal-tar derivatives into W23 through the annular space between the eductor pipe and the well casing resulted in the presence of coal-tar derivative in the W23 bore.

RESPONSE: Reilly denies this request.

359. The Platteville aquifer is recharged by water from the Drift aquifer and some surface sources.

RESPONSE: Reilly admits that the Platteville aquifer is recharged by water from Drift aquifer but after reasonable inquiry and search of information known or readily obtainable by Reilly, Reilly cannot admit or deny that the Platteville aquifer is recharged by some surface sources.

360. Coal-tar derivatives from the Reilly facility did enter the Drift and Platteville aquifers.

RESPONSE: Reilly admits that certain coal-tar derivatives from the Reilly facility did enter the Drift and Platteville aquifers.

361. Soil borings near W23 and W105 indicate that the drift materials in the Drift aquifer are contaminated with coal-tar derivatives.

RESPONSE: Reilly denies this request.

362. Certain coal-tar derivatives in the surface soil and sub-surface drift near W23 and W105 were discharged from the Reilly facility.

RESPONSE: Reilly admits this request.

363. Coal-tar derivatives have entered the W23 bore.

RESPONSE: Reilly denies the request as written. Reilly admits that certain coal-tar derivatives have entered the W23 bore.

364. The entrance of coal-tar derivatives into the W23 bore produced a tar-like material behind the 7-inch casing in W23.

RESPONSE: Reilly denies this request as written. Reilly admits that the entrance of coal-tar derivatives into the W23 bore resulted in a tar-like material behind a portion of the 7-inch casing in W23.

365. The entrance of coal-tar derivatives into the W23 bore resulted in the presence of such derivatives in the bottom of the W23 bore.

RESPONSE: Reilly denies this request. To Reilly's knowledge phenolics have not been detected in samples of the plug of tar-like material in W23 and if "bottom" refers to a depth of 909 feet Reilly after reasonable inquiry is unaware of any data which would allow it to admit or deny this request.

366. Coal-tar derivatives that were spilled or dripped on the ground at the Reilly site infiltrated and percolated into the subsoil in certain areas at and near the Reilly site.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives that were spilled or dripped on the ground at the Reilly site infiltrated and percolated into the subsoil in certain areas at and near the Reilly site.

367. Coal-tar derivatives which infiltrated or percolated through the unsaturated zone at or near the Reilly site have entered the water table.

RESPONSE: Reilly admits that certain coal-tar derivatives which infiltrated or percolated through the unsaturated zone at or near the Reilly site have entered the water table.

368. Coal-tar derivatives which saturated or percolated through the unsaturated zone and entered the water table beneath the Reilly site may have migrated to W23.

RESPONSE: Reilly objects to the undefined use of the term "unsaturated zone" and defines that term to mean the material between ground surface and the water table. Reilly denies the request as written. Reilly admits that certain coal-tar derivatives which saturated or percolated through the unsaturated zone and entered the water table beneath the Reilly site may have migrated to W23.

369. Coal-tar derivatives which have entered the unsaturated zone beneath or near the Reilly site have entered the water table and are migrating in the water system.

RESPONSE: Reilly denies this request as written. Reilly admits that some of the coal-tar derivatives which have entered the unsaturated zone beneath or near the Reilly site have entered the water table and are migrating in the Drift aquifers. See Reilly's responses to Request for Admissions 344 and 345.

370. Coal-tar derivatives which entered the unsaturated zone at Reilly site have entered the upper aquifers beneath the Reilly site.

RESPONSE: Reilly denies this request as written. Reilly admits that some of the coal-tar derivatives which entered the unsaturated zone at the Reilly site have entered the Drift and Platteville aquifers.

371. Coal-tar derivatives which entered the unsaturated zone and the upper aquifers beneath the Reilly site are migrating through those aquifers.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives which entered the unsaturated zone and the Drift and Platteville aquifers are migrating through those aquifers.

372. There is a plug of coal tar-like material in W23.

RESPONSE: Reilly denies this request.

373. Materials entering W23 from the Reilly site during Reilly's operation of the site created a plug of coal tar-like material in W23.

RESPONSE: Reilly denies this request as written. Reilly admits that materials entering W23 from the Reilly site created a plug of coal tar-like material in W23. Reilly qualifies its admission by stating that other materials comprising the plug, such as gravel and collapsed shale, were not from the Reilly site.

374. The plug of coal tar-like material in W23 could have been formed by a spill of coal tar or creosote that entered the well pit and then the well.

RESPONSE: Reilly denies this request.

375. Coal-tar derivatives which are present in W23 have entered the Prairie du Chien-Jordan aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives which were present in W23 have entered the Prairie du Chien-Jordan aquifer.

376. Coal-tar derivatives which are present in W23 have entered the Ironton-Galesville aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives which were present in W23 have entered the Ironton-Galesville aquifer.

377. Coal-tar derivatives which are present in W23 may have entered the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly admits that certain coal-tar derivatives which were present in W23 may have entered the Mt. Simon-Hinkley aquifer.

378. Coal-tar derivatives which have entered the upper aquifers beneath the Reilly site may have migrated into the St. Peter aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives which

have entered Drift and Platteville aquifers beneath the Reilly site may have migrated into the St. Peter aquifer.

379. Coal-tar derivatives which are present in W23 have entered the St. Peter aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives which were present in W23 may have entered the St. Peter aquifer.

380. In or about May 1932, McCa[r]thy Well Company completed a well for the Village of St. Louis Park (hereinafter "SLP") [McCa[r]thy Well Co. record]

RESPONSE: Reilly admits this request.

381. The SLP well completed in 1932 was to be used as a municipal water supply well, designated as W112 by the U.S.G.S. [U.S.G.S. water-supply paper 2211]

RESPONSE: Reilly admits this request.

382. The SLP well completed in 1932 (hereinafter "W112") is located about three-fourths of a mile from the Reilly plant site. [MDH report May, 1938]

RESPONSE: Reilly admits this request.

383. W112 was drilled to a depth of 393 feet. [well log]

RESPONSE: Reilly denies this request.

384. W112 penetrated the Drift-Platteville and St. Peter aquifers.

RESPONSE: Reilly admits this request.

385. W112 penetrated into the Prairie du Chien-Jordan aquifer.

RESPONSE: Reilly admits this request.

386. The use of W1[1]2 as a water supply well was discontinued approximately two weeks after it was opened in 1932.

RESPONSE: Reilly admits this request as corrected.

387. The use of W112 as a water supply well was discontinued due to taste and odor problems.

RESPONSE: Reilly denies this request as written. Reilly admits that the use of W112 was reportedly discontinued due to taste and odor problems.

388. The use of W112 as a water supply well discontinued because of the presence of contaminants causing taste and odor problems.

RESPONSE: Reilly denies this request as written. Reilly admits that the use of W112 was reportedly discontinued because of the presence of some chemical or chemicals causing taste and odor problems.

389. The contaminants causing taste and odor problems in W112 resulted, at least in part, from coal-tar derivatives which had migrated from W23.

RESPONSE: Reilly denies this request.

390. The presence of a creosote taste in W112 indicated that coal-tar derivatives had migrated at least 3,500 feet from W23 in 1932.

RESPONSE: Reilly denies this request.

391. In November, 1978, St. Louis Park municipal wells #7, #9, #10 and #15 were closed.

RESPONSE: Reilly admits this request.

392. Coal-tar derivatives, including PAH compounds, have been detected in SLP wells #7, 9, 10, and 15.

RESPONSE: Reilly admits that certain coal-tar derivatives, including PAH compounds, have been detected in SLP wells #7, 9, 10, and 15.

393. SLP wells #7, 9, 10, and 15 were closed because of the concentrations of PAH compounds detected.

RESPONSE: Reilly admits that SLP wells #7, 9, 10, and 15 were closed by St. Louis Park. Reilly denies the remainder of this request.

394. In February, 1981, the City of Hopkins municipal well #3 was closed.

RESPONSE: Reilly admits this request.

395. Coal-tar derivatives, including PAH compounds, have been detected in Hopkins well #3.

RESPONSE: Reilly admits that certain coal-tar derivatives, including PAH compounds, have been detected in Hopkins well #3.

396. Hopkins well #3 was closed because of the concentrations of PAH compounds detected in the water. [ERT]

RESPONSE: Reilly admits that Hopkins well #3 was closed and denies the remainder of this request.

397. The four municipal wells closed in November 1978, SLP #7, 9, 10 and 15, were completed in the Prairie du Chien-Jordan aquifer. [well logs]

RESPONSE: Reilly admits this request.

398. In December 1979, St. Louis Park municipal well #4 was closed.

RESPONSE: Reilly admits this request.

399. Coal-tar derivatives, including PAH compounds, have been detected in SLP well #4.

RESPONSE: Reilly admits that certain coal-tar derivatives, including PAH compounds, have been detected in SLP well #4.

400. SLP well #4 was closed in 1979 because of the concentrations of PAH compounds detected. [ERT]

RESPONSE: Reilly admits that SLP well #4 was closed in 1979 and denies the remainder of this request.

401. The six supply wells that have been closed in St. Louis Park accounted for approximately 22% of the City Water System's total supply (based on average annual production from 1972 to 1977). [ERT]

RESPONSE: Reilly admits this request.

402. The closure of the six water supply wells in St. Louis Park have reduced the city's peak supply capacity from just under 20 million gallons per day to about 12 million gallons per day. [ERT]

RESPONSE: Reilly admits this request.

403. The Prairie du Chien-Jordan aquifer supplies about 75% of the groundwater pumped in the St. Louis Park and seven county metropolitan area. [USGS Water-Supply Paper 2211, p. 24]

RESPONSE: Reilly admits this request.

404. In August 1981, St. Louis Park municipal well #5 was closed. [ERT]

RESPONSE: Reilly admits this request.

405. Coal-tar derivatives, including PAH compounds, have been detected in SLP well #5.

RESPONSE: Reilly admits that certain coal-tar derivatives, including PAH compounds, have been detected in SLP well #5.

406. SLP well #5 was closed because of the concentrations of PAH compounds detected. [ERT]

RESPONSE: Reilly admits that SLP well #5 was closed and denies the remainder of this request.

407. SLP wells #4 and #5, and Hopkins well #3 were completed in the Prairie du Chien-Jordan aquifer. [well logs]

RESPONSE: Reilly admits this request.

408. The PAH contaminants found in municipal wells SLP #4, 5, 7, 9, 10 and 15 and Hopkins #3 are characteristics of coal tar constituents.

RESPONSE: Reilly denies this request.

409. Coal-tar derivatives present in SLP wells #4, 5, 7, 9, 10 and 15 and Hopkins well #3 originated at the Reilly site.

RESPONSE: Reilly denies this request as written. Reilly admits that certain of the PAH contaminants present in SLP wells #4, 5, 7, 9, 10 and 15 may have originated at least in part from the Reilly site.

410. Coal-tar derivatives present in SLP wells #4, 5, 7, 9, 10 and 15 and Hopkins well #3 have migrated through the Prairie du Chien-Jordan aquifer from W23.

RESPONSE: Reilly denies this request as written. Reilly admits that certain of the PAH contaminants found in SLP wells #4, 5, 7, 9, 10 and 15 at least in part may have reached the wells by migration through the Prairie du Chien-Jordan aquifer from W23.

411. Coal-tar derivatives present in SLP wells #4, 5, 7, 9, 10 and 15 and Hopkins well #3 have migrated through the Prairie du Chien-Jordan aquifer from the Reilly site.

RESPONSE: Reilly denies this request as written. Reilly admits that certain of the PAH contaminants

found in SLP wells #4, 5, 7, 9, 10 and 15 may have reached the wells from the Reilly site via leaking multi-aquifer wells off site and subsequent migration through the Prairie du Chien-Jordan aquifer.

412. Table A3-2 of the Appendix A of the report "Recommended Plan for a Comprehensive Solution of the Polynuclear Aromatic Hydrocarbon Contamination Problem in the St. Louis Park Area," prepared by Environmental Research and Technology, Inc. (hereinafter "ERT Report") is a true and correct representation of the quality of drainage ditch water leaving the Reilly site.

RESPONSE: Reilly denies this request. The reported data are spot measurement of a highly variable stream and therefore does not represent the flow over time as implied in this request.

413. Table A3-3 of Appendix A of the ERT Report is a true and correct representation of the average concentrations of oil, grease, and phenolics present in discharge wastewater produced by the Reilly plant.

RESPONSE: Reilly denies this request as written. Reilly admits that Table A3-3 of Appendix A of the ERT Report is a true and correct representation of the averages of the data reported in Table A3-2.

414. Table B3-1 of Appendix B of the ERT Report is a true and correct summary of the concentrations of

phenolics and benzene extractable hydrocarbons present in the soils noted in that table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table B3-1 of Appendix B of the ERT Report is a true and correct summary of reported concentrations of phenolics and benzene extractable hydrocarbons reported to be present in the soils noted in that table, according to the references noted therein.

415. Table B3-2 of Appendix B of the ERT Report is a true and correct representation of the estimated background concentrations of phenolics and benzene extractable hydrocarbons for soil types indicated in that table.

RESPONSE: Reilly admits this request.

416. Table B5-1 of Appendix B of the ERT Report is a true and correct representation of the concentration of phenolics present in the wells listed in that table on the dates indicated in Table B5-1.

RESPONSE: Reilly denies this request as written. Reilly admits that Table B5-1 of Appendix B of the ERT Report is a true and correct representation of reported concentrations of phenolics reported to be present in the wells listed in that table on the dates indicated in Table B5-1, according to the references noted therein.

417. Table B5-2 of Appendix B of the ERT Report is a true and correct representation of the concentrations of

PAHs present in the wells listed in that table on the dates indicated in table B5-2.

RESPONSE: Reilly denies this request as written. Reilly admits that Table B5-2 of Appendix B of the ERT Report is a true and correct representation of reported concentrations of PAH reported to be present in the wells listed in that table on the dates indicated in Table B5-2, according to the references noted therein.

418. Table C3-4 of the Appendix C of the ERT Report is a true and correct representation of the characteristics of the fluid withdrawn from W13 (located between Highway 7 and Lake Street) on the dates indicated in that table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table C3-4 of the Appendix C of the ERT Report is a true and correct representation of reported characteristics of the fluid withdrawn from W13 on the dates indicated in that table, according to the references noted therein.

419. Table E3-1 of Appendix E of the ERT Report is a true and correct representation of the concentration of total PAHs measured in the Prairie du Chien-Jordan aquifer at the wells listed and the times indicated in that table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table E3-1 of the ERT report is a

true and correct representation of the reported concentration of total PAHs measured in the Prairie du Chien-Jordan aquifer at the wells listed and the times indicated in that table, according to the references noted therein.

420. Table K5-3 of Appendix K of the ERT Report is a true and correct representation of the concentrations of PAH compounds (classified under the categories "Total Carcinogens" and "Total Noncarcinogens") detected in the SLP municipals wells indicated in that table on the dates noted in the table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table K5-3 of Appendix K of the ERT Report is a true and correct representation of the reported concentrations of PAH compounds (classified under the categories "Total Carcinogens" and "Total Noncarinogens") reported to be detected in the SLP municipal wells indicated in that table on the dates noted in the table, according to the references noted therein.

421. Table K5-4 of Appendix K of the ERT Report is a true and correct reprsentation of the concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") present in the Hopkins municipal wells indicated in that table on the dates indicated in the table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table K5-4 of Appendix K of the

ERT report is a true and correct representation of the reported concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") reported to be present in the Hopkins municipal wells indicated in that table on the dates indicated in the table, according to the references noted therein.

422. Table K5-5 of Appendix K of the ERT Report is a true and correct representation of the concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") present in the Edina municipal wells indicated in that table on the dates indicated in the table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table K5-5 of Appendix K of the ERT Report is a true and correct representation of the reported concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") reported to be present in the Edina municipal wells indicated in that table on the dates indicated in the table, according to the references noted therein.

423. Table K5-6 of Appendix K of the ERT Report is a true and correct representation of the concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") present in the monitoring and private wells indicated in that table on the dates indicated in the table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table K5-6 of Appendix K of the

ERT Report is a true and correct representation of the reported concentrations of PAH compounds (classified as "Total Carcinogens" and "Total Noncarcinogens") reported to be present in the monitoring and private wells indicated in that table on the dates indicated in the table, according to the references noted therein.

424. Table K5-7 of Appendix K of the ERT Report is a true and correct representation of the concentrations of phenolics present in the wells indicated in that table on the dates indicated in the table.

RESPONSE: Reilly denies this request as written. Reilly admits that Table K5-7 of Appendix K of the ERT Report is a true and correct representation of the reported concentrations of phenolics reported to be present in the wells indicated in that table on the dates indicated in the table, according to the references noted therein.

U. W23 and W105 Cleanout

425. Video inspection of the W23 casing revealed holes in the well casing at or about 215 feet below GS and 264 feet below GS.

RESPONSE: Reilly admits this request.

426. The holes in the W23 casing at or about 215 feet below GS were in the portion of casing located in the St. Peter aquifer.

RESPONSE: Reilly denies this request.

427. The holes in the W23 well casing at or about 264 feet below GS were in the portion of casing located in the Prairie du Chien[-Jordan] aquifer.

RESPONSE: Reilly admits this request as corrected.

428. Using a downhole flow meter, it was estimated that 150 gpm of ground water was flowing down the well from the St. Peter aquifer into the Prairie du Chien-Jordan aquifer through holes in the W23 casing.

RESPONSE: Reilly denies this request.

429. Water flowed from W23 into the Prairie du Chien-Jordan aquifer through the hole in the W23 casing at or about 264 feet below GS.

RESPONSE: Reilly admits this request.

430. A coating of coal tar-like material covers the Prairie du Chien rock surface near the W23 well casing at or about 264 feet below GS.

RESPONSE: Reilly denies this request as written. Reilly admits that based on visual evidence, it appears that a coating of coal tar-like material may cover portions of the Prairie du Chien rock surface near the W23 well casing at or about 264 feet below GS.

431. A plug of coal tar-like material filled the well bore of W23 from [at] or about 595 feet below GS to 740 feet below GS.

RESPONSE: Reilly admits this request as corrected.

432. A bailer was used in the cleanout of W23 in an effort to remove the plug of coal tar-like material from W23.

RESPONSE: Reilly admits this request.

433. From time to time during the cleanout of W23, the bailer emerged from the well covered with coal tar-like material which had to be heated to be removed from the bailer.

RESPONSE: Reilly denies this request.

434. During the W23 cleanout, some of the coal tar-like material on the outside of the bailer, when heated by a blow torch, would sustain a flame.

RESPONSE: Reilly admits this request.

435. The television log of the W23 cleanout showed that the well was coated with coal tar-like materials at various locations along the well bore.

RESPONSE: Reilly objects to this request as ambiguous since there were many television logs of the W23 cleanout. However, Reilly admits that based on visual evidences it appears that W23 may have been coated with a coal tar-like material at various locations along the well bore.

436. The television log of the W23 cleanout showed a coating of coal tar-like material in a solution channel in the Prairie du Chien formation at about 264 feet below GS. [ERT, D-4]

RESPONSE: Reilly objects to this request as ambiguous since there were many television logs of the W23 cleanout. However, Reilly admits that based on visual evidence during the W23 cleanout it appears that a coating of coal tar-like material may cover a portion of a solution channel in the Prairie du Chien formation at about 264 feet below GS.

437. A sample of water from the Prairie du Chien-Jordan aquifer taken during the W23 cleanout showed a concentration of 328 micrograms per liter of total PAH.

RESPONSE: Reilly denies this request.

438. W23 was uncased in the Ironton-Galesville aquifer.

RESPONSE: Reilly admits this request.

439. The plug of coal tar-like material in W23 was exposed to the Ironton-Galesville aquifer for the entire thickness of the aquifer.

RESPONSE: Reilly admits this request.

440. The Ironton-Galesville aquifer was directly exposed to contaminants in W23 from the time the coal tar-like plug was first introduced.

RESPONSE: Reilly denies this request.

441. Concentrations of PAHs in the parts per million have been found in the Ironton-Galesville aquifer in water samples taken from W23.

RESPONSE: Reilly denies this request.

442. Coal-tar derivatives have entered the Ironton-Galesville aquifer from W23.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives have entered the Ironton-Galesville aquifer from W23.

443. As some time in the past, shale plates in W23 broke off the well bore and fell into the well hole at approximately 740 feet below GS.

RESPONSE: Reilly admits this request.

444. The shale plates breaking off the well bore in W23 apparently formed a bridge at approximately the 740 foot level below GS.

RESPONSE: Reilly admits this request.

445. The shale-plate bridge apparently formed in W23 at the 740 foot level below GS is not an impermeable seal.

RESPONSE: Reilly denies this request.

446. Coal-tar derivatives may have migrated through the shale-plate bridge in W23 to a depth beyond 740 feet below GS.

RESPONSE: Reilly denies the request as written. Reilly admits that certain coal-tar derivatives may have migrated through the shale-plate bridge in W23 to a depth beyond 740 feet below GS.

447. Coal tar-like material was detected at depths below 740 feet during the cleanout of W23.

RESPONSE: Reilly admits that coal tar-like material was detected at depths below 740 feet during the cleanout of W23 but qualifies its response by stating that the sampling method was not clean and that the material detected below 740 feet probably came from above 740 feet.

448. W23 originally penetrated the Mt. Simon formation.

RESPONSE: Reilly admits this request.

449. It is possible for water in W23 to migrate through the shale-plate bridge at 740 feet into the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly objects to this request as ambiguous in that no time period is given and therefore denies this request.

450. Contaminants from the plug of coal tar-like material in W23 have been in contact with the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly denies the request as written. Reilly will admit this request if contaminants are defined for purposes of this admission as constituents of the plug of coal tar-like material and limits its admission to contact with the Mt. Simon-Hinkley aquifer as a result of the "cleaning" of the well in 1982.

451. As the cleanout of W23 progressed, individual hydrologic units were isolated and water samples collected.

RESPONSE: Reilly denies this request.

452. PAH concentrations in the thousands to millions of parts per trillion were detected in samples taken from W23 during the cleanout of that well in samples taken in the Platteville, Prairie du Chien-Jordan, and Ironton-Galesville aquifers.

RESPONSE: Reilly denies this request.

453. Samples taken during the W23 cleanout from water in or above the contact of the Eau Claire confining bed and Mt. Simon-Hinckley aquifer and indicate PAH concentrations in the thousands to millions of parts per trillion.

RESPONSE: Reilly denies this request.

454. Samples from the Mt. Simon formation taken during the W23 cleanout indicate the presence of coal-tar derivatives in the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly denies this request.

455. A sample tube taken from W23 on June 11, 1982 at a depth of 574.6 feet below GS emerged with tar coating the outside of the tube. (2275001) - (Note: The seven digit number is the Reilly document number for the W23 cleanout field notes).

RESPONSE: Reilly admits that a sample tube taken from W23 on June 11, 1982 at a depth of 574.6 feet below GS emerged with a tar-like material coating the outside of the tube.

456. The core barrel sample taken from W23 at 575 feet below GS on June 11, 1982 was a black, tarry substance with the consistency of thick honey, and had a petroleum odor. (2275003)

RESPONSE: Reilly admits that this is a reported statement in the well logs or field reports but qualifies its response by indicating that the field descriptions were not meant to be analytical categorizations of the substances and odors being reported. Reilly further states that the reported observations contain highly subjective and qualitative descriptions based upon individual experience.

457. The second and third samples taken from W23 at a depth of 593 and 598 feet below GS on June 15, 1982 had a tar-like appearance.

RESPONSE: Reilly qualifies its admissions by stating that the second and third drawing of materials from W23 at a depth of 593 and 598 feet below GS on June 15, 1982 had a tar-like appearance but denies that the material withdrawn was "samples" as that term is commonly used, referring to materials placed in jars and labeled.

458. Samples taken from W23 on June 16, 1982, contained what appeared to be a tarry substance.

RESPONSE: Reilly qualifies its admission by stating that material withdrawn from W23 on June 16, 1982 contained what appeared to be a tarry substance.

459. One sample taken from W23 on June 16, 1982 at a depth of 615.5 feet below GS burned when heated with a torch. (2275013)

RESPONSE: Reilly admits this request.

460. Samples taken from W23 depths of 610, 612, 616.5 and 626 feet below GS in June, 1982 had a similar, sandy, tar-like appearance. (2275012-19)

RESPONSE: See response to Request for Admission 456.

461. Material taken from W23 at a depth of 634 feet below GS on June 23, 1982 was a tarry, gooey material. (2275027)

RESPONSE: See response to Request for Admission 456.

462. During the cleanout of W23 in June, 1982, at a depth of 641 feet below GS, approximately 20 feet of a tarry, gooey substance covered the walls of the drilling tool. (2275028)

RESPONSE: See response to Request for Admission 456.

463. The material taken from W23 at a depth of 651-1/2 feet below GS was a thick, tarry, gooey material. (2275040)

RESPONSE: See response to Request for Admission 456.

464. On July 1, 1982, material removed from W23 by the bailer at a depth of 680 feet below GS, was filled with a brownish, tarry, soupy material. (2275048)

RESPONSE: See response to Request for Admission 456.

465. Material taken from W23 at a depth of 690 feet below GS on July 6, 1982, was a brown, tarry substance which covered the outside and inside of a bailer; as heat was applied, the brown tarry material changed to very black, runny, tarry material. (2275052)

RESPONSE: See response to Request for Admission 456.

466. A tar-like odor was noted near W23 on July 6, 1982. (2275052)

RESPONSE: See response to Request for Admission 456.

467. On July 8, 1982, the bailer in W23 emerged covered on the outside with a blackish, tarry sandy material which emitted strong tar-like odors. (2275058)

RESPONSE: See response to Request for Admission 456.

468. Material taken from W23 at depths of 780 and 786 feet below GS on July 12, 1982 was a black, tarry substance of low viscosity, containing pieces of shale and stone. (2275061)

RESPONSE: See response to Request for Admission 456.

469. Material taken from W23 in July, 1982, at depths of 800 and 815 feet below GS was a black-grey slurry of tarry, watery liquid which left tarry deposits on the sides of the bailer. (2275063)

RESPONSE: See response to Request for Admission 456.

470. The material taken from W23 at a depth of 820 feet below GS on July 16, 1982, if spilled on a person, left black, tarry stains on the skin after washing with water and smelled like coal tar. (2275067)

RESPONSE: See response to Request for Admission 456.

471. Material removed from W23 on July 23, 1982, at a depth of 825 feet below GS had a strong tarry odor.

RESPONSE: See response to Request for Admission 456.

472. The material removed by the bailer from W23 at a depth of 830 feet below GS on July 20, 1982, was a grayish mud with traces of black, tarry material, and had the same odor of tar as was present in the material taken from W23 at a depth of 680 feet below GS.

RESPONSE: See response to Request for Admission 456.

473. The material removed from W23 by the bailer at a depth of 840 feet below GS on July 27, 1982, was a watery, grayish-black liquid with a tarry odor; black, tarry substances were floating on the grayish liquid and emitted a strong tarry odor. (2275083)

RESPONSE: See response to Request for Admission 456.

474. Material taken from W23 from a depth of 850 feet below GS in July, 1982 was a watery substance with a gas film on top of the watery material. (2275085)

RESPONSE: See response to Request for Admission 456.

475. Water initially pumped from W23 on August 5, 1982, had a grayish appearance and a tarry odor. After 18 minutes of pumping, the water began to get clearer. (2275097)

RESPONSE: See response to Request for Admission 456.

476. Water pumped from W23 on August 6, 1982, initially had a cleaner gray color, then turned very gray, had a tarry odor, and oil film; after 15 minutes of pumping, the water was a clearer gray, with an oil film on top of the water. (2275100)

RESPONSE: See response to Request for Admission 456.

477. The water pumped out from monitoring wells in the swamp area near the Reilly site on September 13, 1982 had a very brown or black appearance and emitted a tarry odor. (2276916)

RESPONSE: Reilly denies this request.

478. The water sample from W23 during pumpout on September 17, 1982, at 12:06:30 p.m. had a dark gray, almost black appearance, a strong odor, and sheen or film on the surface. (234087)

RESPONSE: See response to Request for Admission 456.

479. When a trench pond was dug in October, 1982, to handle water from the W23 pumpout, the soil moved to construct the trench pond had a strong coal tar-like odor. (2276967)

RESPONSE: See response to Request for Admission 456.

480. A bulldozer used to construct the trench pond to handle water from W23 pumping in October, 1982, uncovered large chunks of tar in the soil moved in the process of digging out the pond. (2276968)

RESPONSE: See response to Request for Admission 456.

481. Water pumped from W23 at 15:44:30 hours on October 25, 1982, contained a large amount of black material and sand. (2276975)

RESPONSE: See response to Request for Admission 456.

482. According to the field notes of Rod Renner, the worst-looking water pumped from W23 was the water first pumped from W23 on the morning of October 26, 1982. (2276977)

RESPONSE: Reilly denies this request.

483. A sample of material from W23 taken on November 3, 1982 at 4:28 p.m. had a coal tar-like odor, and an oil sheen or film on the surface of the sample. (2341908)

RESPONSE: See response to Request for Admission 456.

484. A sample taken from W23 on November 4, 1982, at 4:20 p.m. had a clean appearance, contained many small black specks, and had a strong coal tar-like odor. (2341914)

RESPONSE: See response to Request for Admission 456.

485. On November 29, 1982, in an attempt to remove the seven-inch casing from W23 at a depth of 246 feet below GS, air was forced down W23. The water discharge, after air compression was initiated, began as a very dark colored water with a strong odor. (2341945)

RESPONSE: See response to Request for Admission 456.

486. Seventeen minutes after air compression began in W23 on November 29, 1982, the water discharging from the well was dirty-gray in color.

RESPONSE: See response to Request for Admission 456.

487. The ten-inch casing removed from W23 on November 29, 1982, had a tar-like material clinging to its sides. (2341948)

RESPONSE: See response to Request for Admission 456.

488. A thick coat of black material covered the lower section of the ten-inch casing pulled from W23 on November 29, 1982.

RESPONSE: See response to Request for Admission 456.

489. Portions of casing removed from W23 in December, 1982 were covered with heavy accumulations of black, tar-like material. (2341955-2341968)

RESPONSE: See response to Request for Admission 456.

490. Water pumped from W23 on January 25, 1983 was very black and contained a tarry-sand mixture. (000218)

RESPONSE: See response to Request for Admission 456.

491. Water from W23 pumped at a depth of 262 feet below GS on July 26, 1983, was blackish in appearance and contained a mixture of blobs of tar and sand. (000222)

RESPONSE: See response to Request for Admission 456.

492. There was a black encrustation on certain casings removed from W23 during the W23 cleanout. (000237)

RESPONSE: See response to Request for Admission 456.

493. A hole in the 7-inch casing in W23 allowed approximately 100 gal. min. of murky material to enter the W23 borehole. (000242)

RESPONSE: Reilly denies this request as written. Reilly admits that Ed Renner, based upon a television log, estimated that a hole in the 7-inch casing in W23 allowed approximately 100 gal/min of murkey material to enter the W23 borehole. See also, response to Request for Admission 456.

494. Casing taken from W23 on September 7, 1983 was covered with a black film of tar-like material on the outside of the casing. The black material appeared to be a mix of water, mud, and an oily or tar-like substance with a slight tar-like odor. (000266)

RESPONSE: See response to Request for Admission 456.

495. The entire 8-inch casing removed from W23 in September, 1983 was coated with a black film.

RESPONSE: See response to Request for Admission 456.

496. A television log of W23 on September 9, 1983 showed considerable areas of very dirty water, flecks of

material in the water, and a coating of dark material along the casing. (000278-80)

RESPONSE: Reilly denies this request based upon a visual examination of the television log of W23 on September 9, 1983. Reilly admits that this is a reported statement in the Soil Exploration field notes for which the response to Request for Admission 456 also applies.

497. Material bailed from W23 on September 14, 1983, at a depth of 366 feet below GS was very dirty in appearance; a sample taken at 1420 hours on that date appeared to be bentonite coated with a tar-like material. (000284)

RESPONSE: Reilly denies this request.

498. Material bailed from W23 on September 16, 1983, from a depth of 379 feet below GS contained a high percentage of black, tar-like material which was fairly thick in consistency. (000285)

RESPONSE: See response to Request for Admission 456.

499. Material bailed from W23 at a depth of 380 feet below GS was a very thick, sticky, tar-like substance.

RESPONSE: See response to Request for Admission 456.

500. Material bailed from W23 on September 20, 1983, at a depth of 382 feet below GS contained a high percentage of tar-like material. (000290)

RESPONSE: See response to Request for Admission 456.

501. Tar-like materials were bailed from W23 at depths of 440 feet through 470 feet below GS in September, 1983. (000292)

RESPONSE: See response to Request for Admission 456.

502. W105 penetrated to a depth of at least 866 feet before it was filled in.

RESPONSE: Reilly objects to this request as ambiguous in that it does not specify a time period therefore, Reilly denies the request.

503. In or about the mid-1930's, W105 was filled in by Reilly.

RESPONSE: Reilly admits this request.

504. The fill placed in W105 in the mid-1930's was removed from the well during the cleanout of W105.

RESPONSE: Reilly admits that most of the fill placed in W105 in the mid-1930's was removed from the well during the cleanout of W105.

505. Individual hydrologic units were isolated during the cleanout of W105 and water samples from each unit were collected.

RESPONSE: Reilly denies this request.

506. Water pumped from W105 on November 2, 1983, had a coal tar-like odor similar to the odor present in water pumped from W23. (000313)

RESPONSE: Reilly admits that this is a reported statement in the well logs or field reports but qualifies its response by indicating that the field descriptions were not meant to be an analytical categorization of the substances and odors being reported. Reilly further states that the reported observations contain highly subjective and qualitative descriptions based on individual experience.

507. Water bailed from W105 on November 18, 1983, at a depth of 123 feet below GS had a coal tar-like odor and appeared to contain colored oil slicks. (000336)

RESPONSE: See response to Request for Admission 506.

508. A section of casing pulled from W105 on November 30, 1983 was dirty and coated with black material; in some locations, the material coating the casing had a rainbow-like oil sheen. (000356)

RESPONSE: See response to Request for Admission 506.

509. Material bailed from W105 on November 30, 1983, at a depth of 140 feet below GS was black and had a coal tar-like smell. (000360)

RESPONSE: See response to Request for Admission 506.

510. Material bailed from W105 on July 23, 1984 at a depth of 435 to 450 feet below GS had a grayish-brown appearance and a creosote-like odor. (000425)

RESPONSE: See response to Request for Admission 506.

511. Material bailed from W105 at depths of 485 feet, 515 feet, 530 feet, 565 feet, 608 feet, 620 feet, and 650 feet below GS was generally grayish and silty in appearance and had a coal tar-like odor. (000425-30)

RESPONSE: See response to Request for Admission 506.

512. An area approximately 100' by 50' was used to stockpile material bailed from W105.

RESPONSE: Reilly denies this request. The material bailed from W105 was not stockpiled.

513. The area in which material bailed from W105 was stockpiled emitted a strong coal tar and napthalene-like odor. (000431)

RESPONSE: Reilly denies this request.

514. Material bailed from W105 at depths of 650 and 670 feet below GS was grayish in appearance, contained a coal tar-like odor, and had a rainbow sheen.

RESPONSE: See response to Request for Admission 506.

515. Material bailed from W105 on July 30, 1984 at a depth of 753 feet below GS had a coal tar-like odor. (000436)

RESPONSE: See response to Request for Admission 506.

516. Material bailed from W105 at a depth of 759 feet below GS on July 31, 1984 contained a brown, petroleum-like product floating on water, and small globules of tar floating on water. (000437)

RESPONSE: See response to Request for Admission 506.

517. The discharge of water from W105 on August 10, 1984 appeared grey, with a brown, petroleum-like material floating on top of the water.

RESPONSE: See response to Request for Admission 506.

518. The water taken from W105 at a depth of 405 feet below GS in August, 1984, had a creosote-like odor. (000449)

RESPONSE: Reilly denies this request as written. Reilly admits that water taken from W105 in August, 1984 while an air jet was being used at a depth of 405 feet below GS was reported as having a creosote-like odor. See response to Request for Admission 506.

519. The water discharged from W105 at a depth of 575 feet below GS on August 13, 1984 had a grayish-yellow appearance, a coal tar-like odor, and contained a brown, petroleum-like material floating on the surface of the water. (000450)

RESPONSE: See response to Request for Admission 506.

520. Material bailed from W105 on August 14, 1984 had a napthalene-like odor. (000451)

RESPONSE: See response to Request for Admission 506.

521. Material bailed from W105 on August 16, 1984 at a depth of 700 feet below GS had a coal tar-like odor.

RESPONSE: See response to Request for Admission 506.

522. Bailed material from W105 on August 17, 1984 at a depth of 765 feet below GS had a coal tar-like odor. (000455)

RESPONSE: See response to Request for Admission 506.

523. Video inspection of W105 during cleanout revealed small coal tar-like "globules" in and about the Prairie du Chien formation.

RESPONSE: Reilly denies this request.

524. The coal tar-like globules present in W105 indicate that a second coal-tar derivative phase was able to move through the Prairie du Chien portion of the Prairie du Chien-Jordan aquifer when W105 was pumped.

RESPONSE: Reilly denies this request.

V. Use of Pentachlorophenol

525. Pentachlorophenol (PCP) was used by Reilly as a wood preservative.

RESPONSE: Reilly admits this request. Reilly qualifies its response by stating that Reilly never used pentachlorophenol in petroleum distillate. Pentachlorophenol was used in a 2 percent solution in creosote oil.

526. PCP was used at the Reilly Tar Site, St. Louis Park, Minnesota. (Reilly weekly reports)

RESPONSE: Reilly admits that pentachlorophenol was used at the Reilly Tar Site, St. Louis Park, Minnesota for a short period of time.

527. PCP was used at the Reilly Tar Site in and about the early 1960's. (Reilly weekly reports)

RESPONSE: Reilly admits that pentachlorophenol was used at the Reilly Tar site in and about the early 1960's.

528. Reilly managed PCP at the St. Louis Park site in the same manner in which Reilly managed creosote, with respect to procedures used in unloading tank cars, storage, and wood treating.

RESPONSE: Reilly denies this request. Pentachlorophenol is a solid and this would be managed differently than creosote.

W. ERT Appendices

529. A multi-aquifer well is a well which provides a hydraulic connection between more than one hydrogeologic unit.

RESPONSE: Reilly denies this request as written. Reilly admits that a multi-aquifer well is a well which provides a hydraulic connection between more than one aquifer.

530. Because of the potentiometric elevation of the aquifers in the St. Louis Park area, in a multi-aquifer well, the head gradient will tend to produce flow from an upper aquifer to a lower aquifer.

RESPONSE: Reilly admits this request.

531. Groundwater from a contaminated upper aquifer in the St. Louis Park area may be conveyed to a lower aquifer through multi-aquifer wells.

RESPONSE: Reilly admits this request.

532. A 1981 study by the U.S. Geological Survey found five multi-aquifer wells with significant interaquifer flow (up to 150 gal/min) in the St. Louis Park area.

RESPONSE: Reilly admits this request.

533. The coal tar-like plug of material in W23 at a depth of 595 feet below GS was a black, viscous material.

RESPONSE: Reilly denies this request as written. Reilly admits that the coal tar-like plug of material in W23 at a depth of 595 feet below GS was a black, viscous material mixed with sand and gravel.

534. A black, viscous, coal tar-like material coated the rock surfaces of the Prairie du Chien formation in the vicinity of the holes in the well casing at 264 feet.

RESPONSE: Reilly denies this request as written. Reilly admits that based on visual evidence it appears that a coating of coal tar-like material may have coated portions of the rock surfaces in the Prairie du Chien formation in the vicinity of the holes in the well casing at 264 feet.

535. After its first two pumping tests until 1933, the 80 feet of W23 closest to ground surfaces were uncased, allowing water from the Platteville formation to contribute to the well.

RESPONSE: Reilly denies this request. See Response to Request for Admission 317.

536. The well casing removed by Barr Engineering from W23 was covered with coal tar material from about 40 feet below GS; the material thickened with depth.

RESPONSE: Reilly denies this request.

537. A sample of water taken from W23 in the Prairie du Chien-Jordan aquifer after a packer was installed in the well at about 250 feet contained 328 micrograms per liter of total PAH.

RESPONSE: Reilly objects to this request as vague and ambiguous. Subject to that objection, Reilly refers plaintiffs to Request for Admission 552 and Reilly's response to that request.

538. On July 29, 1982, the bailer being used to remove material from W23 became irretrievable lodged in the well hole at 866 feet below GS.

RESPONSE: Reilly admits this request.

539. The bailer was not able to remove any material from W23 at a depth below 866 below GS.

RESPONSE: Reilly admits that the bailer that was irretrievably lodged in W23 was not able to remove any material from W23 at a depth below 866 below GS.

540. Contaminated water from W23 was in contact with water in the Mt. Simon-Hinckley aquifer.

RESPONSE: Reilly objects to this request as ambiguous due to a lack of time frame and therefore denies this request as written. Reilly admits that during the time period July 9 through September 28, 1982, contaminated water from W23 may have been in contact with water from the Mt. Simon-Hinkley aquifer.

541. Water in the Ironton-Galesville aquifer was directly exposed to the coal tar-like plug of material in W23 for the entire time the plug was in the well.

RESPONSE: Reilly denies this request.

542. Samples collected from the Ironton-Galesville and Franconia formations on October 18-19, 1982 and November 4 and 5, 1982 contained concentrations of total PAH in the part per million range.

RESPONSE: Reilly denies the request as written. Reilly admits that the samples collected at W23 from the Ironton-Galesville and Franconia formations on October 18-19, 1982 and November 4-5, 1982 were reported to contain concentrations of total PAH in the part per million range. Reilly qualifies the response by adding that the samples may not be representative of the formations identified and the samples were probably affected by the recent clean-up work at the well.

543. The concentrations of total PAH in samples collected from the Ironton-Galesville and Franconia formations on October 18 and 19, 1982 and November 4 and 5, 1982 which were in the part per million range did not decrease in concentration over the 24-hour pumping periods.

RESPONSE: Reilly denies this request as written. Reilly admits that the reported concentrations of total PAH in samples collected at W23 from the Ironton-Galesville and Franconia formations on October 18 and 19, 1982 and November 4 and 5, 1982 which were in the part per million range did not appreciably decrease in concentration over the 24-hour pumping periods.

544. Contaminants were transported from the Basal St. Peter formation to the Prairie du Chien-Jordan aquifer through holes in the W23 well casing which allowed about 150 gallons per minute to flow from the St. Peter into the Prairie du Chien.

RESPONSE: Reilly denies this request.

545. The holes in the casing of W23 have allowed contaminated water from the ground surface at the Reilly site and contamination in the Drift-Platteville aquifer to migrate down the outside of the W23 well casing, enter the well at the holes in the casing at the St. Peter aquifer through the holes at 264 feet.

RESPONSE: Reilly denies this request.

546. A television log made on December 13, 1982, shows coal tar-like material coating portions of the rock surface in both the Prairie du Chien and Jordan formations.

RESPONSE: Reilly denies this request as written. Reilly admits that a television log made on December 13, 1982, appears to show coal tar-like material coating portions of the rock surface in the Prairie du Chien at a depth of 260 to 264 feet. Reilly denies that the television log shows coal tar-like material coating portions of the rock surface in the Jordan formation.

547. Samples of water taken from the W23 well bore from October 21 to 29, 1982 at depths from 520 to 710 feet below GS contained an estimated 10 to 20 parts per million of separate phase coal tar-like materials.

RESPONSE: Reilly denies this request as written. Many samples were taken from W23 on those dates while an air jet was being used at depths from 520 to 710 feet below

GS, only some of which were estimated to contain 10 to 20 ppm of tar-like material.

548. The ten-inch casing of W23 penetrating the St. Peter aquifer was ungrouted.

RESPONSE: Reilly admits that grout was not used in constructing W23.

549. Contaminants in the Drift-Platteville aquifer may have migrated to the St. Peter aquifer as a result of leakage around the ungrouted ten-inch casing of W23.

RESPONSE: Reilly admits this request.

550. Leakage in the annular space in W23 between the casing and the well bore allowed contaminants to migrate to deeper aquifers.

RESPONSE: Reilly denies this request as written. Reilly admits that leakage in the annular space in W23 between the well casing and the well bore may have allowed contaminants to migrate to the deeper aquifers.

551. Contaminants leaking through the annular space between the casing and the well bore in W23 could enter the well through the hole in the ten-inch casing at 215 feet and contaminate lower portions of the well.

RESPONSE: Reilly admits this request.

552. A water sample from W23 collected in 1981 by the U.S. Geological Survey and analyzed by Midwest Research Institute contained 328 micrograms per liter of total PAH.

RESPONSE: Reilly admits that a water sample from W23 collected in 1981 by the USGS and analyzed by Midwest Research Institute was reported to contain 328 micrograms per liter of total PAH.

553. It is not possible at this time based on available data, to quantitatively determine whether all of the coal tar-like plug in W23 has been removed.

RESPONSE: Reilly denies this request.

554. W23 has been and will continue to be a source of contamination in each of the bedrock aquifers it penetrates.

RESPONSE: Reilly denies this request.

555. The W23 casing penetrating the Drift-Platteville aquifer is likely to be partially coated with coal tar-like material.

RESPONSE: Reilly denies this request.

556. In multi-aquifer wells, during open-hole construction, water may flow freely down the hole from top to bottom, intersecting all penetrated aquifers.

RESPONSE: Reilly objects to the undefined use of the terms "open hole construction," "flow freely" and "intersecting aquifers," and therefore denies this request.

557. In a multi-aquifer well, after construction, water may flow freely down the well hole unless all penetrated aquifers are isolated by grouting.

RESPONSE: Reilly denies this request.

558. Leaks in casing in multi-aquifer wells may permit interaquifer flow.

RESPONSE: Reilly admits this request.

559. Interaquifer flow may occur in multi-aquifer wells within the annular space between the well casing and the well bore.

RESPONSE: Reilly admits this request.

560. Interaquifer flow from the Drift-Platteville and St. Peter aquifers into underlying aquifers via multi-aquifer wells in the St. Louis Park area has been estimated to exceed the amount of water withdrawn from those two aquifers in the vicinity of the Reilly site.

RESPONSE: Reilly admits that the interaquifer flow from the Drift-Platteville and St. Peter aquifers into underlying aquifers via multi-aquifer wells in the St. Louis Park area has been estimated by Hult & Schoenberg (1984) to exceed the amount of water withdrawn from those two aquifers in the vicinity of the Reilly site.

561. Table D4-1 of Appendix D of the ERT Report is a true and correct listing of known multi-aquifer wells in the St. Louis Park area.

RESPONSE: Reilly denies this request. The Hickok well survey identified additional multi-aquifer wells not found on Table D4-1.

562. Coal-tar derivatives from the Reilly plant in St. Louis Park have migrated at least 1400 feet to the east of and contiguous with the Reilly site in the Drift-Platteville aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that certain coal-tar derivatives from the Reilly plant in St. Louis Park have migrated up to 1400 feet downgradient from W13 through surficial deposits (Drift-Platteville aquifer) from the site.

563. The St. Peter aquifer is vulnerable to contamination because of fractures in the Glenwood shale and in areas where the Glenwood shale is absent.

RESPONSE: Reilly denies this request.

564. The bog area south of the Reilly plant site is contaminated by creosote-like oil present in the groundwater beneath the bog.

RESPONSE: Reilly denies this request.

565. Exposure of the artificial fill underlying most of the surface of the Reilly site in the area of the sump construction in the fall of 1982 at W23 revealed two bands of black-stained fill which resembled layers of pavement.

RESPONSE: Reilly denies this request.

566. The upper band of stained fill near the sump constructed at W23 in 1982 is approximately six to eight inches thick; the second band is approximately 12 inches thick and lies 18 inches below the surface.

RESPONSE: Reilly admits this request.

567. There is a tributary bedrock valley to the east of the Reilly site.

RESPONSE: Reilly admits this request.

568. Figure B4-8 of Appendix B of the ERT Report is a true and correct representation of the approximate location of the tributary bedrock valley areas located east of the Reilly site.

RESPONSE: Reilly admits this request.

569. In the tributary bedrock valley east of the Reilly site, the Platteville and Glenwood bedrock units have been eroded, and the St. Peter Sandstone formation is in direct contact with glacial sediments. (B-29)

RESPONSE: Reilly admits that in the tributary bedrock valley east of the Reilly site, the Platteville and Glenwood bedrock units have been removed by erosion and the St. Peter Sandstone formation is in direct contact with glacial sediments.

570. There is a steep, downward vertical hydraulic gradient over and into the tributary bedrock valley ea[st] of the site.

RESPONSE: Reilly admits that there is a downward vertical hydraulic gradient between the Drift and St. Peter aquifers over the tributary bedrock valley located southeast of the site.

571. The steep, downward hydraulic gradient over and into the bedrock valley east of the site carries a portion of the groundwater discharge from the Reilly site down into the St. Peter formation.

RESPONSE: Reilly denies this request.

572. Approximately 30 percent of the groundwater flow over the bedrock valley flows down from the Drift-Platteville aquifer into the underlying bedrock units.

RESPONSE: Reilly denies this request as written. Reilly admits that computer modeling done by ERT indicates that approximately 30% of the groundwater flow over the bedrock valley flows down from the Draft-Platteville aquifer into the underlying bedrock via the valley.

573. Near surface artificial fill in the southern half of the Reilly plant site was contaminated by benzene extractable hydrocarbons in concentrations of 1,020 to 44,400 milligrams per kilogram, which is 1.4 to 59 times the background concentration.

RESPONSE: Reilly denies this request as written. Reilly admits that samples of near surface artificial fill in the southern half of the Reilly plant site were collected in 1976 and reported by Barr to contain benzene extractable hydrocarbons in concentrations of 1,020 to 44,400 milligrams per kilogram which is 1.4 to 5.9 times the backround concentration.

574. Near-surface artificial fill from the southern half of the Reilly site contains phenolics in concentrations of 1.2 to 26.3 milligrams per kilogram, which is 1.2 to 26 times greater than backround concentration.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I6 is cited on page B-37 of the ERT Report and was reported by Barr to contain phenolics in concentrations of 1.2 to 26.3 milligrams per kilogram, which is 1.2 to 26 times greater than backround concentration.

575. Boring I6 is cited on Page B-37 of the ERT Report, detected a concentration of phenolics of 1.4 milligrams per kilogram at 830 feet below GS and 1 milligram per kilogram at 850 feet below GS.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I6 cited on Page B-37 of the ERT Report was analyzed and reported in 1976 to contain concentrations of phenolics of 1.4 milligrams per killogram at elevation 830 feet (NGVD and 1 milligram per kilogram at elevation 850 feet.)

576. Boring I6, cited on Page B-37 of the ERT Report, indicates that there are concentrations of benzene extractable hydrocarbons of 1050 milligrams per kilogram at a depth of 850 feet below GS.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I6, cited in Page B-37 of

the ERT Report, was reported to contain concentrations of benzene extractable hydrocarbons of 1050 milligrams per kilogram at elevation 850 feet.

577. Boring I14 and I4 cited in Page B-37 of the ERT Report indicate that there are discrete zones of contamination detected in those boring samples.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I14 and I4 cited in Page B-37 of the ERT report indicated that there were reported discrete zones of measured contamination detected in those boring samples.

578. Boring I4 contained the largest concentrations of benzene extractable hydrocarbons and phenolics in the southern half of the Reilly site known at the time of the ERT Report.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I4 was reported to contain the largest measured concentrations of benzene extractable hydrocarbons.

579. Boring I4 and 1B cited on Page B-37 of the ERT Report indicate a depth of continuous contamination of eighteen feet.

RESPONSE: Reilly denies this request as written. Reilly admits that Boring I4 and I5 cited on Page B-37 of the ERT Report was reported to have a depth of continuous measured contamination of eighteen feet.

580. The upper thirteen feet of boring I4, cited in the ERT Report, contained benzene extractable hydrocarbon concentrations ranging from 3.2 to 59 times background concentrations and phenolic concentrations of 4.5 to 26 times background concentrations.

RESPONSE: Reilly denies this request as written. Reilly admits that the upper thirteen feet of boring I4, cited in the ERT Report was reported to contain benzene extractable hydrocarbon measured concentrations ranging from 3.2 to 59 times backround concentration and phenolic measured concentrations of 4.5 to 26 times backround concentrations.

581. The fill beneath the southern portion of the Reilly site contains concentrations of benzene extractable hydrocarbons ranging from 28,600 to 44,400 milligrams per kilogram.

RESPONSE: Reilly denies this request as written. Reilly admits that the sampled portion of the fill at boring I4 from a depth of 3 to 7 feet was reported to contain concentrations of benzene extractable hydrocarbons ranging from 28,000 to 44,400 milligrams per kilogram.

582. Bog deposits south of the Reilly site contain concentrations of benzene extractable hydrocarbons ranging from 63,600 to 188,000 milligrams per kilogram, and concentrations of phenolic ranging from 45 to 209 milligrams per kilogram.

RESPONSE: Reilly denies this request as written. Reilly admits that the sampled portion of bog deposits at boring I4 at a depth of 7 to 13 feet was reported to contain concentrations of benzene extractable hydrocarbons ranging from 63,600 to 188 milligrams per kilogram and concentrations of phenolic ranging from 45 to 209 milligrams per kilogram.

583. The lowest zone of the lower drift, which lies in contact with the Platteville limestone formation, contains benzene extractable hydrocarbons at levels of 1770 milligrams per kilogram and phenolic concentrations of 5.1 milligrams per kilogram.

RESPONSE: Reilly denies this request.

584. Contamination concentration patterns in the lower Drift aquifer suggest that contamination at that depth is a result of lateral and vertical migration of contaminants.

RESPONSE: Reilly objects to the undefined use of the term contaminants, and with respect to Requests for Admissions 584-588 and 590-593 interprets that term to mean concentrations of phenolics and benzene extractable materials above backround measurements. Reilly admits that this request is true based on measurements made to assess contamination that are now 8 or more years old and qualifies its response by stating that the concentrations may have changed.

585. The southern half of the Reilly site is generally contaminated from the original surface to a depth of about 10 feet.

RESPONSE: Reilly admits that the southern half of the Reilly site is variably contaminated from the original surface to a depth of about 10 feet, based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating that the concentrations may have changed.

586. The areas of greatest near-surface contamination at the Reilly site are near the former wood-treatment areas and the area of the former coal-tar refinery.

RESPONSE: Reilly admits this request is true based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating that the concentrations may have changed.

587. Contamination concentrations in the Middle and Lower Drift aquifer indicate that contaminants have migrated laterally and downward from areas in which they were received at the surface of the Reilly site.

RESPONSE: Reilly admits this request is true based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating that the contaminations may have changed.

588. The bog south of the Reilly plant site received contaminants from surface runoff and wastewater discharged from the Reilly plant.

RESPONSE: Reilly admits this request.

589. The bog south of the Reilly site received plant effluent throughout the Reilly plant's operational history.

RESPONSE: Reilly denies this request as written. Reilly admits that the bog south of the Reilly site received some of the plant effluent throughout the Reilly plant's operational history.

590. The peat and organic silt underlying the bog are generally contaminated from the original surface to a depth of 10 feet.

RESPONSE: Reilly admits this request is true based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating that the contaminations and location of contamination may have changed.

591. There are discrete zones of contamination in the bog below the generally contaminated original bog surface.

RESPONSE: Reilly admits this request is true based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating

that the contaminations and location of contamination may have changed.

592. The pattern of contamination at the Reilly site indicates that contaminants have been applied to the surface in an uneven manner.

RESPONSE: Reilly denies this request as written. Reilly admits that the pattern of contamination at the Reilly site indicates that contaminants have reached the surface in an uneven manner.

593. Contaminant inflow to surficial sediments at the Reilly site was concentrated in areas such as the coal tar refinery, timber treatment area, surface water runoff channel, and deeper surface water flow zones of the bog.

RESPONSE: Reilly admits this request is true based on measurements made to assess the contamination that are now 8 or more years old and qualifies its response by stating that the concentrations may have changed.

594. Creosote is typically composed of about 85 percent polynuclear aromatic hydrocarbons, two to seventeen percent phenolics, and the thirteen percent various heterocyclic compounds. (B-46)

RESPONSE: Reilly denies this request as written. Reilly admits that the U.S. Forest Products Lab (1974) has reported that creosote is typically composed of about 85 percent polynuclear aromatic hydrocarbons, two to

seventeen percent phenolics, and less than or thirteen percent various heterocyclic compounds.

595. Concentrations of phenolics in the Lower Drift aquifer for approximately 2000 feet east of the site range from 140 to 340 micrograms per liter. (B-57)

RESPONSE: Reilly denies this request as written. Reilly admits that in W17, which is approximately 2000 feet east of the site (screened in the Lower Drift) phenolics have been reported in concentrations ranging from 32 to 340 micrograms per liter, but denies that today these concentrations exist.

596. The Midco well, W33, lies approximately 1500 feet east of the center of the bog near the Reilly site.

RESPONSE: Reilly admits this request.

597. The Midco well (W33) has concentrations of phenolics ranging from 140 to 390 micrograms per liter.

RESPONSE: Reilly admits that concentrations of phenolics ranging from 140 to 390 micrograms per liter have been reported in W33 but denies that today W33 has these concentrations.

598. Well W17 has concentrations of phenolics ranging from 32 to 340 micrograms per liter. (B-58)

RESPONSE: Reilly admits that concentrations of phenolics ranging from 32 to 340 micrograms per liter have been reported in W17 but denies that today W17 has these concentrations.

599. Two phases of PAH compounds may be present in and around W13, an aqueous solution, and an oily, PAH-enriched phase. (B-60)

RESPONSE: Reilly denies this request as written. PAH is understood to be entirely in the liquid phase. PAH may be present in and around W13 in the aqueous phase of the ground fluid and as a free oil in the oily, PAH enriched phase.

600. The aqueous phase of ground fluid in well W13 contains 29,100 micrograms per liter phenolics and 22,300 micrograms per liter PAH.

RESPONSE: Reilly denies this request as written. Reilly admits that the aqueous phase of ground fluid in W23 was reported by Erhlich, et. al in 1982 to contain 29,100 micrograms per liter phenolics and 22,300 micrograms per liter PAH.

601. The oily, PAH-enriched phase of well W13 contains nearly one gram of PAH per kilogram of fluid.

RESPONSE: Reilly denies this request as written. Reilly admits that the mixed phases have been reported to contain nearly one gram of PAH per kilogram of fluid.

602. The PAH contained in the ground fluid at Well W13 are present in types and proportions that are characteristic of creosote. (B-60)

RESPONSE: Reilly denies this request as written. Reilly admits that the PAH contained in the ground fluid at W13 were reported by Ehrlich et. al 1982, to be present in types and proportions that are generally characteristic of creosote.

603. The two-phase pore-fluid contamination beneath the Reilly site occupies an approximately five foot-thick lens on top of the upper till. (B-61)

RESPONSE: Reilly denies this request as written. Reilly admits that the maximum possible dimensions of the two-phase ground fluid occurs in an approximately five foot thick lens on top of the upper till that extends approximately 100 feet in all directions from well W13.

604. Figures B5-2, B5-3, B5-4, and B5-5 of the ERT Report are true and correct representations of the concentrations of Total Benzene Extractable Hydrocarbon and Phenolic Concentrations for the cross-sections indicated in those figures.

RESPONSE: Reilly admits that figures B5-2, B5-3, B5-4 and B5-5 of the ERT Report are true and correct representations of the reported concentrations of Total Benzene Extractable Hydrocarbon and Phenolic Concentrations reported in 1976 for the cross-sections indicated in those figures, by the references cited therein.

605. The pattern of soil and groundwater contamination around well W13 indicates that the two phase ground fluid occurs in an approximately five feet-thick lens that extend approximately 100 feet in all directions from W13.

RESPONSE: Reilly denies this request as written. Reilly admits that the pattern of soil and groundwater contamination around W13 indicates that the two phase ground fluid occurs in a maximum dimension of an approximately five-foot thick lens that extends approximately 100 feet in all directions from W23.

606. The Reilly site acts as a local source of contamination to the Drift-Platteville aquifer. (B-63)

RESPONSE: Reilly admits that the Reilly site acts as a local source of certain coal-tar derivatives to the Drift-Platteville aquifer.

607. The contamination entering the Drift-Platteville aquifer from the Reilly site is migrating offsite.

RESPONSE: Reilly denies this request as written. Reilly admits that some contamination entering the Drift-Platteville aquifer from the Reilly site may be migrating offsite.

608. The Midco well (W33) was a potential conduit of contaminants from the Drift-Platteville aquifer to the St. Peter aquifer.

RESPONSE: Reilly denies this request as written. Reilly admits that Midco well (W33) may have been a potential conduit of contaminants from the Drift-Platteville aquifer to the St. Peter aquifer. Whether the contaminant migration took place cannot be determined because there is too little information on the pre-1979 operation of the well, hydraulic parameters in the sediments and rock formations at the well, and the length of time that contaminants have been within the zone of influence of the well.

609. A phenolic concentration of 52 micrograms per liter was measured in well W27.

RESPONSE: Reilly admits this request.

610. The upper five to ten feet of the original surface of the southern half of the Reilly site and the bog are generally contaminated.

RESPONSE: Reilly denies this request as written. Reilly admits that the upper five to ten feet of the original surface of the southern half of the Reilly site and the bog are variably contaminated.

611. Below a depth of five to ten feet, the southern half of the Reilly site and the bog area have discrete zones of soil contamination several feet thick and on an order of 100 feet in lateral extent.

RESPONSE: Reilly denies this request as written. Reilly admits that below a depth of five to ten feet

below the original surface of the bog and southern half of the Reilly plant site discrete zones of contamination exist, some of which may cover as much as 100 feet in lateral extent.

612. The surficial sediments underlying the southern half of the plant site received contaminants from processes, drippings, spills, and piping failures at the Reilly site, which then entered the groundwater system.

RESPONSE: Reilly denies this request.

613. Relatively concentrated undissolved contaminants have agglomerated into an estimated five foot thick by 200-foot diameter lens in the Middle Drift at well W13.

RESPONSE: Reilly denies this request as written. Reilly admits that relatively concentrated undissolved contaminants have agglomerated into a maximum estimated five-foot thick by 200-foot diameter lens in the Middle Drift at well W13.

614. The concentrated undissolved contaminants in the Middle Drift at well W13 have created a two component ground fluid composed of a phenolic-rich aqueous phase and a denser PAH-rich oily phase. (B-69)

RESPONSE: Reilly denies this request.

615. The Drift-Platteville aquifer is hydraulically connected to lower bedrock units.

RESPONSE: Reilly denies this request.

616. A buried bedrock valley cuts through the Glenwood shale confining bed to the St. Peter aquifer, and over a narrow[er] path, through the St. Peter to the Prairie du Chien group. (E-49)

RESPONSE: Reilly admits this request as corrected.

617. The buried bedrock valley is filled with glacial drift and till.

RESPONSE: Reilly admits this request.

618. The buried bedrock valley is an area in which the Drift-Platteville aquifer communicates hydraulically with the St. Peter and Prairie du Chien aquifers.

RESPONSE: Reilly admits this request.

619. There is a small tributary bedrock valley south of the Reilly plant site.

RESPONSE: Reilly admits this request.

620. A portion of the horizontal flow in the Drift-Platteville aquifer above the bedrock valley is intercepted and flows vertically down the valley into the St. Peter aquifer.

RESPONSE: Reilly admits this request.

621. The Drift-Platteville flow into the bedrock valley accounts for over 60% of the flow in the St. Peter aquifer downgradient from the valley. (E-58)

RESPONSE: Reilly admits that groundwater flow modeling by ERT indicates that the Drift-Platteville flow into the bedrock valley accounts for over 60% of the flow in the St. Peter aquifer downgradient from the valley.

622. Well W23 has served as a direct source of contamination of some deeper aquifers underlying the Reilly site. (208)

RESPONSE: Reilly denies this request as written. Reilly admits that W23 may have served as a direct source of certain coal-tar derivatives to some deeper aquifers underlying the Reilly site.

623. Polycyclic aromatic hydrocarbons (PAH) were the first compounds ever shown to be associated with the development of cancers in animals. [ERT Report, p. I-3]

RESPONSE: Reilly admits this request.

624. Several members of the PAH class, mostly notably benzo[a]pyrene, 3- methycholanthrene, and 7, 12-dimethylbenz[a] anthracene, are among the most potent carcinogens known to exist. [ERT Report, p. I-3]

RESPONSE: Reilly denies this request.

625. Tumors can be produced by a single exposure to PAH. [ERT Report, p. I-3]

RESPONSE: Reilly denies this request as written. Reilly admits that tumors may be produced by a single exposure to some carcinogenic PAH, if the dose is high enough.

626. PAH acts both at the site of contact (e.g., skin, lungs) to produce tumors, as well as at organs distant to the site of absorption. [ERT Report, p. I-3]

RESPONSE: Reilly admits that certain PAH may act both at the site of contact (e.g., skin, lungs) to produce tumors, as well as at organs distant to the site of absorption. Reilly qualifies its response by stating that this is not peculiar to PAH.

627. The carcinogenic affects of PAH have been demonstrated in nearly every tissue and species tested, regardless of the route of administration. [ERT Report, p. I-3]

RESPONSE: Reilly denies this request as written. Reilly admits that the carcinogenic affects of benzo[a]pyrene have been demonstrated in nearly every tissue and species tested, regardless of the route of administration.

628. Among the more potent carcinogenic PAH at least one, benzo[a]pyrene, produces tumors in animals that resemble human carcinomas. [ERT Report, p. I-3]

RESPONSE: Reilly admits this request, but qualifies its response by stating that this is not an unusual property among carcinogens.

629. Many of the s[i]mple alkylated derivatives of carcinogenic PAH will also demonstrate carcinogenic activity. [ERT Report, p. I-3]

RESPONSE: Reilly admits that many of the simple alkylated derivatives of carcinogenic PAH will also demonstrate carcinogenic activity in animals.

630. Numerous heterocyclic derivatives of PAH have also demonstrated carcinogenic activity in animals. [ERT Report, pp. I-3, I-9]

RESPONSE: Reilly admits this request.

631. Table I2-1 of the ERT Report accurately represents the carcinogenic activity of some unsubstituted polycyclic aromatic hydrocarbons. [ERT Report, pp. I-4, I-5]

RESPONSE: Reilly admits this request.

632. Table I2-2 of the ERT Report accurately represents the carcinogenic activity of some substituted polycyclic aromatic hydrocarbons. [ERT Report, pp. I-6, I-8]

RESPONSE: Reilly admits this request.

633. Table I2-3 of the ERT Report accurately represents the carcinogenic activity of some unsubstituted heterocyclic compounds. [ERT Report, p. I-10]

RESPONSE: Reilly admits this request.

634. Epidemiologic evidence from exposed worker populations has established that human occupational exposure to certain PAH-containing substances is associated with an elevated cancer risk. (Redmond, et al. 1979, 1976, 1972; Hammond, et al. 1976; Doll, et al. 1972; Cookson 1924; Haldin-Davis 1985; Lenson 1956.) [ERT Report, p. I-12]

RESPONSE: Reilly admits this request. Reilly qualifies its response by stating that there has been no showing that the PAH involved in such exposures is a cause of the higher cancer incidence and substantial epidemiologic evidence exists that the PAH is not such a causal factor.

635. Animal studies with various coal-tar derivatives confirm the carcinogenicity of certain PAH - containing complex mixtures. (Horton et al. 1953; Tye and Stemmer 1967; Kinkead 1973; McConnell and Specht 1973; MacEwen and Vernot 1976; MacEwen, et al. 1976; Wallcave, et al. 1971; Lijinsky, et al. 1957; Routwell and Bosch 1958; Roe, et al. 1958) [ERT Report, p. I-12]

RESPONSE: Reilly admits this request, if "carcinogenicity" refers to animal carcinogenicity.

636. Several reputable scientific bodies have concluded that there is no scientific basis for assuming the existence of a threshold, or no-effect, level of exposure for chemical carcinogens. (NAS 1977); Albert, et al. 1977) [ERT Report, p. I-14]

RESPONSE: Reilly qualifies its response by admitting that regulatory policy generally assumes that there is no threshold, or no-effect level of exposure for carcinogen risk assessment purposes.

637. The best available evidence for quantitative estimation of carcinogenic risk for PAH comes from animal studies. [ERT Report, p. I-15]

RESPONSE: Reilly denies this request.

638. For several of the specific carcinogenic PAH -- notably benzo[a]pyrene, dibenz[a, h] anthracene, and 3-methylcholanthrene -- relevant bioassay data involving oral exposures are available for risk extrapolation. (Neal and Rigdon 1967; Snell and Stewart 1962; Homb[ur]ger, et al. 1978) [ERT Report, p. I-15]

RESPONSE: Reilly admits this request. Reilly qualifies its response by noting that dibenz[a,h]anthracene, and 3- menthylcholanthrene are not found in St. Louis Park water, and are not found in the environment.

639. From animal studies it is posible to estimate in a quantitative fashion the carcinogenic risk to humans who are similarly exposed to certain carcinogenic PAH, including benzo[a]pyrene, dibenz[a, h] anthracene, and 3-methylcholanthrene via drinking water or the diet. [ERT Report, p. I-15]

RESPONSE: Reilly denies this request.

640. Table I4-1 of the ERT Report accurately represents a summary of PAH average concentrations occurring in water supplies. [ERT Report, pp. I-28, I-29]

RESPONSE: Reilly denies this request as written. Reilly admits that Table I4-1 of the ERT Report accurately represents a summary of PAH average reported concentrations in samples from water supplies, reported by the references noted therein.

641. Table I4-2 of the ERT Report accurately represents the individual PAH compounds analyzed in St. Louis Park Wells and in studies of other water supplies. [ERT Report, pp. I-31, I-32]

RESPONSE: Reilly denies this request as written. Reilly admits that Table I4-2 of the ERT Report accurately represents reported concentrations of PAH compounds for which analyses were made in St. Louis Park Wells and other water supplies, reported by the references noted therein.

642. Table I4-3 accurately represents aggregate PAH and oxygenated-PAH concentrations in Great Lake municipal drinking supplies on two sampling dates. [ERT Report, p. I-33]

RESPONSE: Reilly denies this request as written. Reilly admits that Table I4-3 accurately represents aggregate PAH and oxygenated-PAH concentrations reported in samples collected at Great Lake municipal drinking supplies on two sampling dates, reported by the references noted therein.

643. It appears that levels of noncarcinogenic PAH in some of the St. Louis Park wells (e.g., well SLP15) are higher than typical concentrations found in raw and finished waters in the United States and Canada. [ERT Report, p. I-43]

RESPONSE: Reilly denies this request as written. Reilly admits that it appears that reported concentrations of the levels of PAH in some of the St. Louis Park wells are higher than typical concentrations reported in

raw and finished waters in the United States and Canada. Reilly qualifies its response to add that other waters have not been analyzed nearly extensively as St. Louis Park so the amounts of noncarcinogenic PAH in other waters may be grossly underestimated.

644. In Volume IV of the ERT Report the 28 nanograms per liter criterion for carcinogenic PAH is accepted as the best currently available value to provide for adequate protection of public health. [ERT Report, p. I-45]

RESPONSE: Reilly qualifies its answer by admitting that Appendix I to the ERT Report states on p. I-45: "In the present report the 28 nanograms per liter criterion for carcinogenic PAH is accepted as the best currently available value to provide for adequate protection of public health." Appendix I differs from the rest of the appendices and the ERT Report as a whole in that, as appears from its title, it represents the opinion of its authors, Dr. Julian B. Andelman and Dr. Joseph Santodonato. Moreover, the 28 nanogram criteria was the only published health criteria for carcinogenic PAH available at the time of the report. Reilly does not admit that the EPA criteria was the best that could have been established with the available data. Moreover, as Appendix I and the ERT Report indicate, this criteria is "extremely conservative."

645. It is recommended in the ERT Report that if newly discovered carcinogenic PAH are reported, these substances should be included in the 28 nanograms per liter criterion for carcinogenic PAH. [ERT Report, p. I-45]

RESPONSE: Reilly admits this request but qualifies its response by noting these substances should be included in the 28 nanograms per liter criterion for carcinogenic PAH only if they have been identified by traditional, well-characterized methodologies, and judged to be carcinogenic on the basis of the "weight of the evidence" approach.

Dated: March //, 1985

REILLY TAR & CHEMICAl CORPORATION

By _____
Robert Polack

Subscribed and sworn to before me this 11th day of March, 1985.

_____
Notary Public

VERONICA M. BLEDSOE
MY COMMISSION EXPIRES JANUARY 29, 1986

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